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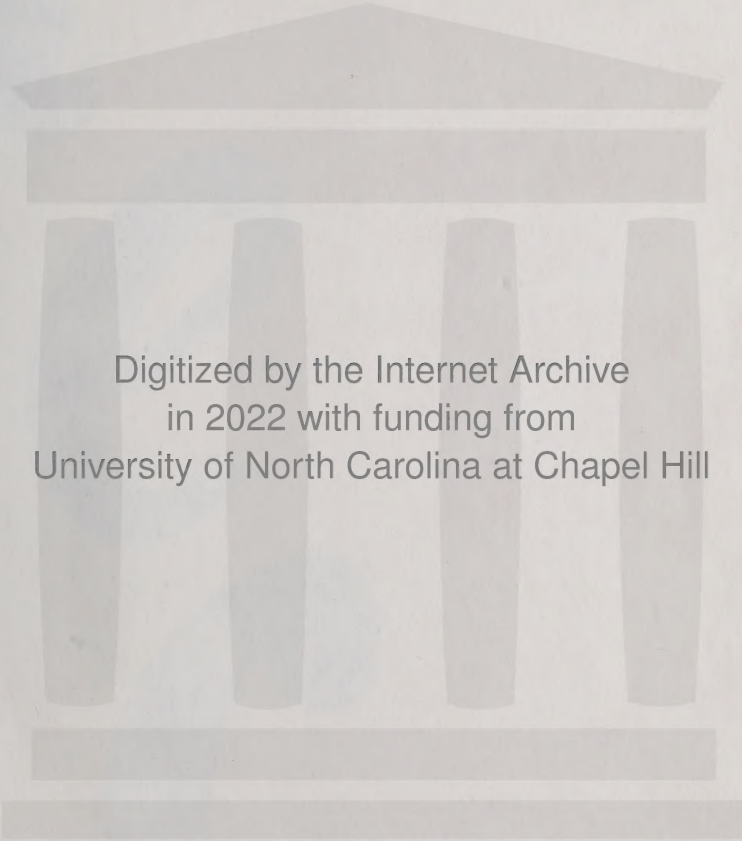
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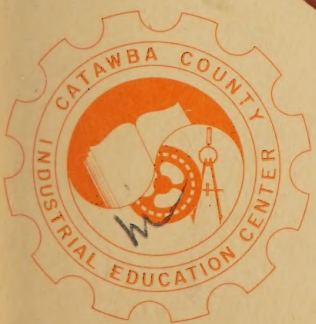
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Catalog
and Bulletin no. III
1963-1964

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**CATAWBA
COUNTY
INDUSTRIAL
EDUCATION
CENTER**

Newton
North Carolina
Hwy. 64-70-321
Midway Newton-Hickory



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CATAWBA COUNTY INDUSTRIAL EDUCATION CENTER

Administration

County Board of Education:

A. C. HENDERSON, Chairman	FRED H. LYTTON
H. T. CAMPBELL, Vice-Chairman	SAM D. MAUNEY
ROBERT L. BOGGS	WADE H. LEFLER, Attorney
HARRY M. ARNDT, Superintendent	

Industrial Education Center

Director.....	ROBERT E. PAAP
Associate Director.....	MARCUS B. SIMPSON
Assistant Director.....	BRUCE B. BISHOP
Coordinator of Agricultural Technology.....	WILLIAM D. KILLIAN

ACADEMIC CALENDAR, 1963-64

FALL QUARTER, 1963

August 26-30—Registration for new students and returning students.

September 3—Classes begin for all day students.

September 10—Last day for registration (late students).

September 17—Classes will begin in upgrading, updating and other special classes.

November 21 & 22—Thanksgiving holidays.

November 27—End of Fall Quarter.

WINTER QUARTER, 1963

November 28 & 29—Registration for Winter Quarter.

December 2—Classes begin.

December 23 to January 2—Christmas holidays.

March 3—End of Winter Quarter.

SPRING QUARTER, 1964

March 15 & 16—Registration for Spring Quarter.

March 9—Classes begin.

Easter holidays (Good Friday and Easter Monday).

May 27—End of Spring Quarter.

SUMMER QUARTER, 1964

May 28 & 29—Registration for Summer Quarter.

June 1—Classes begin.

July 6-10—Fourth of July (School will be closed).

August 25—End of Summer Quarter.

It is understood that if the schedule is interrupted by inclement weather, holidays may be affected. Furthermore, the scheduled holidays and the calendar may be changed pending upon policy in the operation of the school.

GENERAL INFORMATION

HISTORY

The Catawba County Industrial Education Center was established through the united efforts of the citizens of Catawba County, members of the Catawba County Board of Education, County Commissioners, civic leaders, members of the Hickory Board of Education, members of the Newton-Conover Board of Education, civic organizations, chambers of commerce, N. C. State Department of Public Instruction, Vocational Education Department, and Division of Trade and Industrial Education.

The desire for an Industrial Education Training Center of this nature was conceived by civic minded leaders early in the year 1958. This dream of the people became a reality by establishing a county wide steering committee for formulating the tentative plans and selecting a site for the I. E. C.

A survey was conducted through Catawba County to determine if a need existed for such a school and if the need warranted the establishment of an I. E. C.

The results of the survey indicated a strong need for the establishment of such an I. E. C., and a progressive plan of procedure was adopted.

Actual preliminary grading and construction began December, 1959 with the completion of the building in August, 1960. The building dedication was held on October 17, 1960 with the presence of The Honorable Governor Luther Hodges, Doctor Dallas Herring, Chairman of the State Board of Education, and members of the Department of Conservation and Development, and State Board of Education, plus other State officials.

The physical structure of the I. E. C. is such that the building is constructed in an L-shape. One wing houses the administration offices and classrooms. The other wing provides the shop and laboratory areas. Laboratories and classroom facilities were designed to give spacious accommodations, and are well lighted and ventilated. Each laboratory is equipped with new modern equipment selected specifically for the purpose of training the craftsmen and technicians needed in our industrial area. Classrooms have been provided with new contemporary furniture that also makes the educational program conducive as well as flexible for use. Due to the foresight, efforts and determination of the Catawba County citizens, the I. E. C. became a reality; and the first classes began on September 28, 1960.

8/62/4

PURPOSE

Catawba County Industrial Education Center is dedicated to the pursuit of inquiry into technical and trade education and to the training of students in understanding and participating in such inquiry.

The major objective of the I. E. C. is to provide an opportunity for students to obtain the highest level of technical, trade and upgrading training possible; and at the same time, broaden the student's knowledge of related subjects, which is a prerequisite to specialization in an area of their choice.

TYPES OF PROGRAMS OFFERED AT THE I. E. C.

The I. E. C. offers training on four separate levels to accommodate the educational requirements of the area. The following explanation will describe the various levels.

TYPE I — High School Trade Preparatory Program:

This program is open to high school students who desire preparation toward future employment. Students may enter in a preparatory curriculum of their choice, provided they meet the minimum I. E. C. requirements. Students will be expected to attend one or two nine month terms, depending on the curriculum they pursue. Provisions will be made whereby students may attend the summer quarter, if they desire.

Students pursuing the high school preparatory curriculum will be expected to attend an additional two quarters to qualify for the post high school trade preparatory certificate.

TYPE II — Adult Trade and Preparatory Program:

This program is designed for post high school students, who have reached a great degree of maturity and understanding. Students may enter a curriculum of their choice provided they meet the educational and aptitude requirements in the area of their choice. Students entering into one of the curricula offered in the Type II program will pursue curricula that are more advanced both technically and theoretically, and are required to attend school on twelve months basis until the program has been completed.

TYPE III — Technology Program:

The I. E. C. offers six technical curricula. Students choosing to enter a technical program must meet educational and aptitude requirements for the area of their choice. Technical programs require individuals who have reached adult maturity, have a well founded educational background, and

possess aptitude for this advanced type of training. The technical program requires a curriculum much more advanced than the regular trade program curriculum in that a technician's skills and knowledge generally lie between the skilled craftsman and the engineer. The technical curricula are longer in duration than the trade preparatory programs and put less emphasis on manual manipulation skills and more emphasis on the technical and theoretical aspects of the various technologies. It is recommended that students who desire to pursue one of the six technical areas attend the 6-hour full time program.

TYPE IV — Upgrading, Updating, Extension and Supervisory:

One of the various facets of industrial or technical training lies in the area of upgrading, updating, extension and supervisory education. Special courses of instruction can be established whereby people who are already employed and desire to keep abreast of the latest equipment and technical procedures will have an opportunity to obtain this type of knowledge. The I. E. C. participates in a wide variety of courses to fulfill the area needs in this type of training. Courses of this nature can be established in many different fields to meet the needs of the people of the area.

The I. E. C. recommends that whenever possible a student pursue a 6-hour per day or full time curricula. This type of program has many advantages over the part time program or a program extended over a lengthy duration. Some of the benefits that could be expected from attending a full time program would be: a more economical program, a better organized program, the opportunity for a student to enter a chosen area of endeavor sooner, and better concentration of knowledge. Students who are interested in any one of the curricula that is offered by the I. E. C. should contact the administration at their earliest convenience.

ADMISSION PROCEDURE

IN SCHOOL YOUTH

The records of the students desiring to enroll at the I. E. C. each year will be screened by the school principal and guidance counselor in order to identify students interested in pursuing one of the various I. E. C. curricula.

These students will be contacted by the I. E. C. counselor, who will explain the program and the potential possibilities that they might expect.

Students who meet the minimum requirements for a selected course and who have the school principal's recommendation should complete the application form and arrange their school schedule so as to include the three

hour period needed for attendance at the I. E. C.

Each student must possess the academic background conducive to the program of his selection, and possess a genuine interest for the program of his choice. This aptitude will be determined by the General Aptitude Test Battery (GATB) administered by the North Carolina Employment Security Commission. Additional selected tests may be used with the permission of the director.

Application forms and transcripts will be reviewed by the I. E. C. counselor. Prior to the organization of each class, students who are selected will be notified by mail with a copy of the notification to the school principal when to report to the center.

Students who are interested in a two year trade program will be selected from the rising junior or senior class each spring.

Minimum entrance requirements for trade courses (high school);

Student must be 16 years of age, and have satisfactorily completed all requirements for entrance into the 11th grade.

Students should have completed some basic mathematics course other than general mathematics.

Student should show aptitude for course selected.

It is desirable that students entering into a trade preparatory course pursue advanced mathematics and mechanical drawing during the balance of their high school career.

Admission Procedure for General Students:

Post high school youth and adults will follow the following admission procedure:

Those who are interested in pursuing one of the curricula of the I. E. C. should make formal application to the I. E. C. administration office, and place a \$2 deposit with their application. A referral slip will be given each applicant whereby he can receive his General Aptitude test at the North Carolina Employment Security Commission for admittance. Other selected tests may be used with the permission of the director.

High School transcripts should be forwarded to the counselor of the I. E. C., and this will be the responsibility of the student. Upon receiving this data and a personal interview with the I. E. C. counselor, a selection will be made.

Students who are selected will be notified by letter of their admission and of the date for registartion. Applications for 6-hour pre-employment courses must be in by August 1 of current year.

REGISTRATION AND FEES:

- \$ 2.00 Registration for all students.
- 1.00 Re-entry fee for students dropped or absent 3 or more days in succession.
- 3.00 Out-of-county fee per month for course loads over six hours per week.
- 30.00 Fee for 6 hour (full time) students per quarter.
- 1.50 Per credit hour for less than full time students.
(Credit hour is determined by number of hours taken per week).
- 3.00 Out-of-county fee per quarter for course loads under 6 hours per week.

POLICIES

ACADEMIC REGULATIONS:

Students may enroll in any of the programs offered by the I. E. C. provided they meet proper requirements.

Students may not register for more than one program at any given time. Regular prompt attendance to all classes is compulsory.

Tardiness is excusable only in the case of emergency, and the right to determine an emergency is reserved by the director. Students should be in class prior to the last bell for all opening periods.

Students may be excused from classes under the following conditions:

Emergency Absence: Emergency absence shall be defined as absence due—death in immediate family; illness or injury to the student and verified by an excuse from a reputable medical doctor or dentist stating that he has treated the student and recommends that he does not attend classes. The student must present all excuses in writing to the I. E. C. counselor before re-entry to classes.

Excessive Absences: Students are expected to attend classes according to their pre-arranged schedule. Students will be permitted no more than one day of unauthorized leave per month. More than one day will subject the student to lowered grades, automatic failure, or dismissal from the school.

All the time lost by absences must be made up before credit is given for a course.

A student who withdraws from training due to hardship, illness or shift

change may re-enter providing: (1) the student was in good standing at the time of withdrawal from a program; (2) had notified the I. E. C. counselor in advance of withdrawal; (3) provided scheduling will permit.

Any student who has been dismissed for disciplinary reasons may re-enter after a duration of one year on a probationary basis.

EVALUATION:

The I. E. C. will accept work and give credit for work done in any accredited school offering a similar course. Students will be required to file records of previous training or transcript of previous work for evaluation with the I. E. C. counselor. A minimum of one half program residence is required for receiving credit toward a program completion. Student evaluation will be made each six weeks. If the student's work is unsatisfactory, he will be called in for counseling for the purpose of determining why satisfactory work is not being done. The student may be granted a six week probationary period. If progress is not evident, the student will be dismissed from training.

Any student desiring to change his program of study should first discuss the change with his instructor; then with the I. E. C. counselor.

The grading system shall be as follows:

- A — Excellent — 90 — 100
- B — Good — 80 — 89
- C — Average — 70 — 79
- Failure
- I — Incomplete
- WP — Indicates withdrawal passing
- WF — Indicates withdrawal failing

Grades will be issued at the end of each quarter.

GRADUATION:

The Catawba County I. E. C. will award a state diploma to students who have completed the requirements for a technical curriculum. These requirements are a state examination and a complete review of the student's work by the staff or faculty advisory committee of the I. E. C. Students enrolled in trade curricula will be awarded a certificate of completion upon successfully completing a program, and upon the recommendation of the faculty advisory committee.

Upon request, each graduating student may have one transcript indicating courses and grades without cost. Additional transcript may be obtained on request for a fee of \$1.00.

CURRICULUM

TECHNICAL

- * Air-Conditioning and Refrigeration Technology — 6 qtrs.
 - * Drafting and Design Technology — 6 qtrs.
 - * Electronics Technology — 6 qtrs.
 - * Secretarial Technology — 4 qtrs.
 - * Agricultural Business Technology — 6 qtrs.
 - * Poultry Service Technology — 6 qtrs.
- * Time lengths in terms of quarters have been designated for full time (6-hour day) programs only. Students pursuing a curriculum less than full time (6-hour day) should expect to attend school for a longer duration.

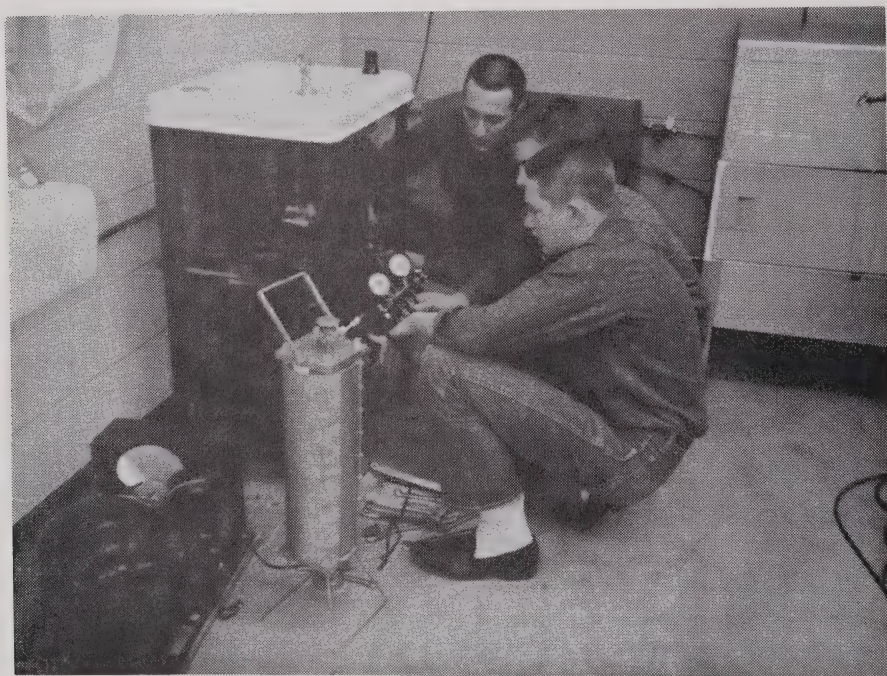
TRADE

- ** Auto Mechanics — 4 qtrs.
 - * Bricklaying — 3 qtrs.
 - * Cutting (Furniture Fabric) — 2 qtrs.
 - ** Drafting — 4 qtrs.
 - Electricity (Preparatory to Electronics)
 - * Knitting Machine Fixing — 2 qtrs.
 - ** Machine Shop — 4 qtrs.
 - * Radio — T.V. — 8 qtrs.
 - * Sewing (Furniture) — 2 qtrs.
 - * Upholstery — 3 qtrs.
- * Half time (3-hour per day).
- ** Designates course that may be taken 3 hours or 6 hours per day.

AIR CONDITIONING AND REFRIGERATION TECHNOLOGY Technician

This is a course designed to help the student become proficient and skilled in the installation, maintenance and repair of equipment used in refrigeration plants and air conditioning systems in homes and industry.

Training is given in the use and care of tools and equipment for inspection and testing. The student will study the various kinds of refrigerants, heat flow and heat calculations, and air comfort standards, cooling methods and heating methods.



C — Class Hours**L — Laboratory Hours****Cr. — Credit Hours****First Quarter****C—L—Cr.**

ACR 401	Fundamentals of Refrigeration I.....	4—2—5
ACR 321	Technical Mathematics I.....	5—0—5
ACR 341	Technical Drafting I.....	1—4—3
ACR 311	Communicative Skills I.....	3—0—3
ACR 333	Basic Electricity.....	3—2—4
ACR 314	Reading Improvement.....	2—0—2

 18—8—22
Second Quarter

ACR 402	Fundamentals of Refrigeration II.....	4—2—5
ACR 322	Technical Mathematics II.....	5—0—5
ACR 343	Technical Drafting II.....	1—4—3
ACR 312	Communicative Skills II.....	2—0—2
ACR 331	Physics I.....	3—2—4
ACR 335	General Chemistry.....	4—2—5

 19—10—24
Third Quarter

ACR 403	Commercial Systems (Conventional and Hermetic).....	5—2—6
ACR 323	Technical Mathematics III.....	5—0—5
ACR 313	Communicative Skills III.....	3—0—3
ACR 404	Air Handling and Ventilation.....	3—2—4
ACR 332	Physics II.....	3—2—4
ACR 343A	Basic Electrical Wiring (AC).....	5—0—5

 24—6—27
Fourth Quarter

ACR 405	Principles of Air Conditioning.....	5—2—6
ACR 406	System Design and Installation.....	2—4—4
ACR 407	Load Calculation & Equipment Sizing.....	5—0—5
ACR 351	Industrial Organization & Management.....	4—0—4
ACR 343B	Applied Electricity.....	3—2—4

 19—8—23
Fifth Quarter

ACR 408	Centrifugal Systems.....	5—2—6
ACR 409	High Velocity Duct Design.....	2—2—3
ACR 410	Psychrometrics.....	5—0—5
ACR 411	Estimating & Layout.....	5—0—5
ACR 337	Welding & Brazing.....	2—2—3
ACR 336	Industrial Specifications.....	3—0—3

 22—6—25
Sixth Quarter

ACR 412	Stage and Cascade Systems.....	4—8—10
ACR 353	Economics.....	4—0—4
ACR 355	Engineering Materials.....	6—0—6
ACR 413	Research Project.....	5—0—5

 21—8—25

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

ACR 401 Fundamentals of Refrigeration I

4—2—5

This course consists of lectures, discussions and experiments. Many fields are covered including terminology, laws of refrigeration, energy conversion units, heat (specific, latent and sensible) measurement of heat in quantity and intensity, ton and refrigeration, pressure temperature relationships, transfer of heat by conduction, radiation and convection, elementary refrigerators, refrigeration cycle and refrigerant controls. Practice will be given in the use of tools, identification of fittings, tube bending and flaring, soft-soldering and silver brazing.

ACR 321 Technical Mathematics I

5—0—5

The real number system is developed as extensions of natural numbers, integers and rational numbers. Insight into the processes of arithmetic and algebra are provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, denominate quantities, vectors and the derivative.

ACR 341 Technical Drafting I

1—4—3

A course designed to provide fundamental knowledge of the principles of mechanical drafting and to develop basic skills and techniques in using drafting room equipment. It covers lettering, orthographic projection, dimensioning and geometric construction.

ACR 311 Communicative Skills I

3—0—3

This course is designed to aid the student in the improvement of self-expression in both business and technical compositions. The approach to this course is functional with emphasis on grammar, diction, sentence structure, punctuation and spelling. This study is intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

ACR 333 Basic Electricity

3—2—4

This course covers the basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Some factors as the electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction, voltage, amperage, resistance, horsepower, wattage and transformers are major parts of the course.

ACR 314 Reading Improvement

2—0—2

Instruction is given in techniques for improving speed and comprehension in reading. A brief analysis of the student's rate of reading is made on the basis of reading tests. Special projectors and instruments designed to aid in increasing speed and comprehension and visual span are used. Emphasis is placed on improving speed of reading and comprehension of technical material.

Second Quarter

ACR 402 Fundamentals of Refrigeration II

4—2—5

This course consists of lectures, discussion and experiments. Topics covered included physical and chemical properties of refrigerants and methods of leak detection, components of refrigeration systems, high vacuum pumps and micron gages, basic electrical controls, electric motors and relays and safety code for mechanical refrigeration.

ACR 322 Technical Mathematics II

5—0—5

Study of the derivative is continued. Differentials and integrals are presented. Algebraic operations and operations of calculus are applied to linear, quadratic and polynomial functions and special equations of second degree. Applications involving rates of change, maxima and minima, approximations, areas, volumes and work are considered. Complex numbers are introduced.

ACR 343 Technical Drafting III

1—4—3

The student continues the study in orthographic projection. Topics covered in

Technical Drafting I are reviewed and emphasized. He gains additional knowledge of the principles of auxiliary views, rotations, sections and conventions, and intersections and developments. Methods and techniques of pictorial drafting, isometric, oblique and perspective representation are covered.

ACR 312 Communicative Skills II

2—0—2

The purpose of the course is to develop the speaking skills with emphasis upon the dual role of speech as both a speaking and listening skill. Stress is also placed upon the growth in poise and confidence on the part of the student. Practice is provided through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development. Prerequisite: Communicative Skills I.

ACR 331 Physics I

3—2—4

This is a fundamental course which covers several of the basic principles of Physics. The divisions included are: solids and their characteristics, liquids in motion, and gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are also an integral part of this course.

ACR 335 General Chemistry

4—2—5

This course involves a study of the physical and chemical properties of substances, chemical changes, elements, compounds, gases, chemical combinations, weights and measurements, theory of metals, acids, salts, solvents, solutions and emulsions. In addition, a study is made of carbohydrates, electro-chemistry, electrolytes and electrolysis in their application of chemistry to industry.

Third Quarter

ACR 403 Commercial Systems (Conventional & Hermetic)

5—2—6

This course includes compressors both conventional and hermetic, special test equipment, air, water and evaporative condensers; dry, flooded, frosting, nonfrosting type evaporators; accessories such as oil separators, heat exchangers, suction accumulators, etc.; installation and servicing of multiple coil systems; tubing, sizing and capacities, defrost systems, automatic controls and commercial troubleshooting.

ACR 323 Technical Mathematics III

5—0—5

Ideas of algebra and calculus are used in a study of trigonometric, logarithmic and exponential functions. Polar coordinates are introduced. Complex numbers and vectors are considered further.

ACR 313 Communicative Skills III

3—0—3

The basic fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term. Prerequisite: Communicative Skills II.

ACR 404 Air Handling and Ventilation

3—2—4

This is a course that studies the blueprint of a residential or industrial building and designs capacity for gravity or forced warm or cold air carrying systems. Studies the elbow and establish equivalencies for boots, angle boots, registers, offsets and other components of the duct system.

ACR 332 Physics II

3—2—4

The major areas covered in this course are work, energy and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their application are also a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

ACR 343A Basic Electrical Wiring (AC)

5—0—5

This course will cover standard symbols for wiring, plans, generators and motor diagrams, and control panels as used in central air conditioning. Switch and panel boards, wiring and an intensive drill of industrial circuitry schematics will be discussed.

ed. Wiring from power supplies to motors, switches, transformers and safety devices will be covered.

Fourth Quarter

ACR 405 Principles of Air Conditioning

5—2—6

This course consists of the cooling and heating equipment for air conditioning purposes, installations and start up of self-contained and remote air conditioners; absorption systems, heat pumps, wiring diagrams with emphasis on correct method of troubleshooting.

ACR 406 System Design and Installation

2—4—4

In this course, the design of central systems for air conditioning will be covered. Arrangement of equipment, duct system, air circulations as it may be worked out in the drafting table to be applied in practice will also be covered. Application of heating loads and cooling loads are to be stressed. Design and installation of Unitary-Central systems where the duct space is saved or eliminated shall be discussed. The zoning for individual room control is application of this course.

ACR 407 Load Calculations & Equipment Sizing

5—0—5

This course will consist of practice in figuring system loads. Topics covered will include: wall heat load, air change load, product load, design temperatures, heat gain from equipment, pressure drop in lines, capacities of coils and compressors, sizing and balancing of components of system, and the use of proper tables and charts pertaining to refrigeration and air conditioning equipment.

ACR 351 Industrial Organization and Management

4—0—4

This is a study of principles of psychology that will help the student understand individual human behavior on the job. Motivation, intelligence and aptitude tests, learning, emotions, employee selection, supervision, job satisfaction and conflicts as related to employees will be studied. Attention will be given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker.

In addition, the student will be acquainted with methods in techniques and practices of modern management planning and organizing and controlling the operation of a manufacturing concern. The following major areas are studied: organization, marketing, purchasing, inventory control, production control, quality control, time study, cost accounting, personnel administration and labor relations.

ACR 343B Applied Electricity

3—2—4

This course is a study of field electrical test instruments, and Ohm meters and measurements. Volt meters, wattmeters, capacitor and high potential testers. The capacitor as used in refrigeration. Capacitors and air conditioning motors will constitute a major item of discussion. Application of formulas related to AC current and proper use of the instruments used in diagnosing trouble in sealed systems.

Fifth Quarter

ACR 408—Centrifugal Systems

5—2—6

This course includes the centrifugal system with its applications to industry. Emphasis is placed on heating and cooling using water as a transfer medium. Pumps, coils, air distribution, valves and controls systems are covered. Applications are an integral part of this course.

ACR 409 High Velocity Duct Design

2—2—3

This course consists of the study of static pressure, velocity pressure, and total pressures as related to high velocity systems. Noise as a problem in air distribution is emphasized. Fan laws, capacity, horsepower requirements, etc., measurement of air flow, developing of formulas encountered with high velocity air are covered.

ACR 410 Psychrometrics

5—0—5

This course will consist of lectures, discussions and experiments in the field of basic

thermodynamics. Humidity, properties of unsaturated moistures, measurable psychrometric properties, relationships between dew point, wet bulb and dry bulb temperatures, humid specific heat, sigma content, the state of a mixture of two air streams, bypass factor, dehumidification by absorption are covered.

ACR 411 Estimating and Layout

5—0—5

This course is designed to teach the student cost estimation, study of parts and specifications, equipment, take-off materials, take-off labor, sub-contractors, estimates, overhead cost, estimates of job and bid procedures.

ACR 337 Welding and Brazing

2—2—3

This course will consist of safety in handling equipment and basic instruction in the field of welding and brazing of ferrous and non-ferrous metals. Methods of fabricating metal structures and equipment, installing and repairing the components of the refrigeration equipment and the methods of joining the different metals encountered in the field will be covered. Correct procedures in handling both oxy-acetylene and arc welding will be taught.

ACR 336 Industrial Specifications

3—0—3

This course is designed to teach the methods of planning, writing and issuing specifications for the various phases of industrial operations. It is also designed to cover the basic information necessary for the advance applications of those methods.

Sixth Quarter

ACR 412 Stage and Cascade Systems

6—8—10

In this course, one fourth of the time will be allotted to the review of material covered previously. Stage, cascade and thermo-electric refrigeration systems will be covered as new subjects. In stage and cascade systems sub-zero temperature to the fields of medicine, agriculture, industry and research, application of thermo-electric refrigeration to modern living will be discussed.

ACR 353 Economics

4—0—4

A course in economics surveying the basic economic concepts and facts as pertaining to the American economic system. Subjects covered include: the free enterprise system, business organization, income distribution, labor, money, banking and the business cycle.

In addition, the following topics are covered: the role of the government in a democratic society, the constitution, Congress and the presidency, the federal court system, federal powers and function and the political party system.

ACR 355 Engineering Materials

6—0—6

This is an introduction to materials commonly used by engineers. The physical properties of engineering materials, ferrous, non-ferrous metals, and wood and concrete are studied. Orientation to the terminology of internal structures, deterioration of materials such as corrosion, erosion, decay, organic and inorganic coatings are stressed.

ACR 413 Research Project

5—0—5

Successful completion of the Air Conditioning and Refrigeration course is dependant upon the student's conducting a research project and writing a thesis report on this project. The student, through consultation with the instructors, will choose an individual project that will, when feasible, involve an active installation. Frequent conferences with his instructors should guide the student in the progress of his research and in the preparation of this thesis.

The written thesis, a minimum of two thousand words, should include the physics, drafting, electricity and air conditioning and refrigeration theory involved in his project.

This report should be presented according to the best standards of technical report writing.

MECHANICAL DRAFTING AND DESIGN TECHNOLOGY

*** ARCHITECTURAL DRAFTING AND DESIGN TECHNOLOGY**

*** FURNITURE DRAFTING AND DESIGN TECHNOLOGY**

Technician

The major emphasis is on giving students a thorough understanding of the fundamental principles of drafting; use and care of drafting equipment, measurements, lettering problem solving with descriptive geometry, three dimensional visualization and sketching, projections, detailing, drawing reproduction, translation of ideas into drawings based on the A. S. A. standards, and general drafting practices.

Included in the program are advanced drafting, elementary perspective projection and basic rendering techniques.

The courses are arranged in a sequence that gives the students technological and special courses as they are needed to correlate their laboratory experience.



C — Class Hours		L — Laboratory Hours	Cr. — Credit Hours
First Quarter			C—L—Cr.
MDD 401	Drafting I		4—6—7
MDD 321	Technical Mathematics I		5—0—5
MDD 311	Communicative Skills I		3—0—3
MDD 314	Reading Improvement		2—0—2
MDD 351	Industrial Organization & Management		4—0—4
MDD 361	Machine Processes I		4—0—4
			19 -10 -24
Second Quarter			
MDD 402	Drafting II		4—6—7
MDD 322	Technical Mathematics II		5—0—5
MDD 312	Communicative Skills II		3—0—3
MDD 331	Physics I		3—2—4
MDD 362	Machine Processes II		1—4—3
			16 -12 -22
Third Quarter			
MDD 403	Drafting III		3—6—6
MDD 323	Technical Mathematics III		5—0—5
MDD 313	Communicative Skills III		2—0—2
MDD 332	Physics II		3—2—4
MDD 335	General Chemistry		4—2—5
MDD 363	Manufacturing Processes		1—2—2
			18 -12 -24
Fourth Quarter			
MDD 404	Drafting IV		4—6—7
MDD 324	Technical Mathematics IV		3—0—3
MDD 326	Descriptive Geometry		1—4—3
MDD 333	Physics III		3—2—4
MDD 364	Engineering Materials		2—4—4
			13 -16 -21
Fifth Quarter			
MDD 405	Drafting V		4—6—7
MDD 365	Strength of Materials		4—6—7
MDD 366	Hydraulics and Pneumatics		2—4—4
MDD 367	Mechanisms		2—4—4
MDD 368	Industrial Specifications		3—0—3
			14 -16 -22
Sixth Quarter			
MDD 406	Drafting VI		4—6—7
MDD 369	Applied Mechanics		5—0—5
MDD 371	Economics		4—0—4
MDD 372	Industrial Controls		3—2—4
MDD 407	Research Projects		5—0—5
			21—8 -25

* The Architectural Drafting and Design Technology and the Furniture Drafting and Design Technology courses will follow basically the Mechanical Drafting and Design Technology during the first part of the course. The individual courses are being revised at the present time.

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

MDD 401 Drafting I

4—6—7

An introduction to drafting, the drafting room and the study of drafting practices. Instruction is given in the selection, use and care of instruments, single-stroke lettering, applied geometry, freehand sketching consisting of orthographic and pictorial drawing, and the orthographic projection, reading and instrument drawing of principal views.

MDD 321 Technical Mathematics I

5—0—5

The real number system is developed as extensions of natural numbers, integers and rational numbers. Insight into the processes of arithmetic and algebra are provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, denominate quantities, vectors and the derivative.

MDD 311 Communicative Skills I

3—0—3

This course is designed to aid the student in the improvement of self expression in both business and technical compositions. The approach to this course is functional with emphasis on grammar, diction, sentence structure, punctuation and spelling. This study is intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

MDD 314 Reading Improvement

2—0—2

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. The tachistoscope is used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

MDD 351 Industrial Organization & Management

4—0—4

A study of principles of psychology that will help the student understand individual human behavior on the job. Motivation, intelligence and aptitude tests, learning, emotions, employee selection, supervision, job satisfaction and conflicts as related to employees will be studied. Attention will be given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker.

MDD 361 Machine Processes I

1—4—3

This study will introduce the machine tool to the technician. This study will utilize an indoctrination in the machine processes. It will acquaint the student with the machine tools, cutting tools, measurement process and the lathe.

Second Quarter

MDD 402 Drafting II

4—6—7

Methods of reproduction are studied as the student is introduced to the "working drawing". American Standards Association practices in dimensioning are emphasized in the study of dimensioning and note practices, and the theory of orthographic projection principles in the study of single (primary) and double (oblique) auxiliary views.

MDD 322 Technical Mathematics II

5—0—5

Study of the derivative is continued. Differentials and integrals are presented. Algebraic operations and operations of calculus are applied to linear, quadratic and polynomial functions and special equations of second degree. Applications involving rates of change, maxima and minima, approximations, areas, volumes and work are considered. Complex numbers are introduced.

MDD 312 Communicative Skills II

3—0—3

The basic fundamentals of English are utilized as a background for the organization

and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term. Prerequisite: Communicative Skills I.

MDD 331 Physics I 3—2—4

This is a fundamental course which covers several of the basic principles of Physics. The divisions included are: solids and their characteristics, liquids in motion, and gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are also an integral part of this course.

MDD 362 Machine Processes II 1—4—3

The student continues his study in the basic fundamentals of machine theory. It includes hole making and the drill press, the shaper, the planer, the milling machine and broaching methods.

Third Quarter

MDD 403 Drafting III 3—6—6

The trainee will study simple and successive revolutions and their applications to practical problems. Sections and conventions will be studied and both detail and assembly sections will be drawn. Intersections and developments will be studied.

MDD 323 Technical Mathematics III 5—0—5

Ideas of algebra and calculus are used in a study of trigonometric, logarithmic and exponential functions. Polar coordinates are introduced. Complex numbers and vectors are considered further.

MDD 313 Communicative Skills III 2—0—2

The purpose of the course is to develop the speaking skills with emphasis upon the dual role of speech as both a speaking and listening skill. Stress is also placed upon the growth in poise and confidence on the part of the student. Practice is provided through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development. Prerequisite: Communicative Skills II.

MDD 332 Physics II 3—2—4

The major areas covered in this course are work, energy and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their application are also a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

MDD 335 General Chemistry 4—2—5

This course involves a study of the physical and chemical properties of substances, chemical changes, elements, compounds, gases, chemical combinations, weights and measurements, theory of metals, acids, bases, salts, solvents, solutions, and emulsions. In addition, a study is made of carbohydrates, electro-chemistry, electrolytes and electrolysis in their application of chemistry to industry.

MDD 363 Manufacturing Processes 1—2—2

This course is being revised.

Fourth Quarter

MDD 404 Drafting IV 4—6—7

Methods of drawing and projecting axonometric, oblique, and perspective drawings will be studied with emphasis on the practical applications of pictorial drawings. Various methods of shading will be introduced and dimensioning and sectioning of oblique and axonometric pictorials will be done.

MDD 324 Technical Mathematics IV 3—0—3

Algebra and calculus are used in the study of plane and solid geometric figures.

Topics include curve sketching, maxima and minima, plane areas, curve lengths, volumes of solids, and surface areas. Some applications of first order differential equations and series representations of selected important functions are presented.

MDD 326 Descriptive Geometry 1—4—3

Introduction to graphic analyses of space problems with basic mathematical proofs. The problems deal with point, line and plane relationships and theorems of solid geometry.

MDD 333 Physics III 3—2—4

This course covers the basic theories of electricity, types of electricity, methods of production, and transmissions and transforming of electricity. Such factors as the electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction, voltage, amperage, resistance, horsepower, wattage and transformers are major parts of the course.

MDD 364 Engineering Materials 2—4—4

This course is being revised.

Fifth Quarter

MDD 405 Drafting V 4—6—7

This course is being revised.

MDD 365 Strength of Materials 3—2—4

This subject will introduce a study of the stresses and strains that occur in bodies when subjected to tensile, compressive, and shearing forces. Stresses in thin walled cylinders and in riveted and welded joints are studied. Shear and bending moment diagrams, investigation in the design of beams and deflection of beams are included. The study continues in stresses, eccentrically applied loads, and torsion and column action. The classroom instruction is supplemented by laboratory tests from which each student must give an individual report.

MDD 366 Hydraulics and Pneumatics 2—4—4

This course is being written.

MDD 367 Mechanisms 2—4—4

This course is being written.

MDD 368 Industrial Specifications 3—0—3

A course developed to inform the trainee of the "what" and "why" of specifications, machine tool and hand tool specifications as well as job and procedure sheets will be studied and organized. Catalogs, specification sheets and manufacturers' handbooks will serve as reference sources.

MDD 406 Drafting VI 4—6—7

This course is being revised.

MDD 369 Applied Mechanics 5—0—5

To provide the student with the basic knowledge of engineering mechanics that is very essential to their technical training. The material will be based upon easily and commonly understood physical concepts and principles of statics and dynamics. Analytical and graphical solutions to problems of form analysis will be presented to show the student the methods of application.

Studies in statics will include hydrostatic pressure, buoyancy, hydrostatic loads, stability of retaining walls, flexible cable and arches. Dynamics will include non-centroided rotation, dynamic equilibrium of plane motion, linear momentum, direct central impact, and angular impulse momentum relationship as applied to practical problems of both rotation and plane motion.

MDD 371 Economics 4—0—4

A course in economics surveying the basic economic concepts and facts as pertain-

ing to the Amrican economic system. Subjects covered are the free enterprise system, business organization, income distribution, labor, money, banking and the business cycle.

MDD 372 Industrial Controls

3—2—4

This course is being written.

MDD 407 Research Projects

5—0—5

This course is being revised.

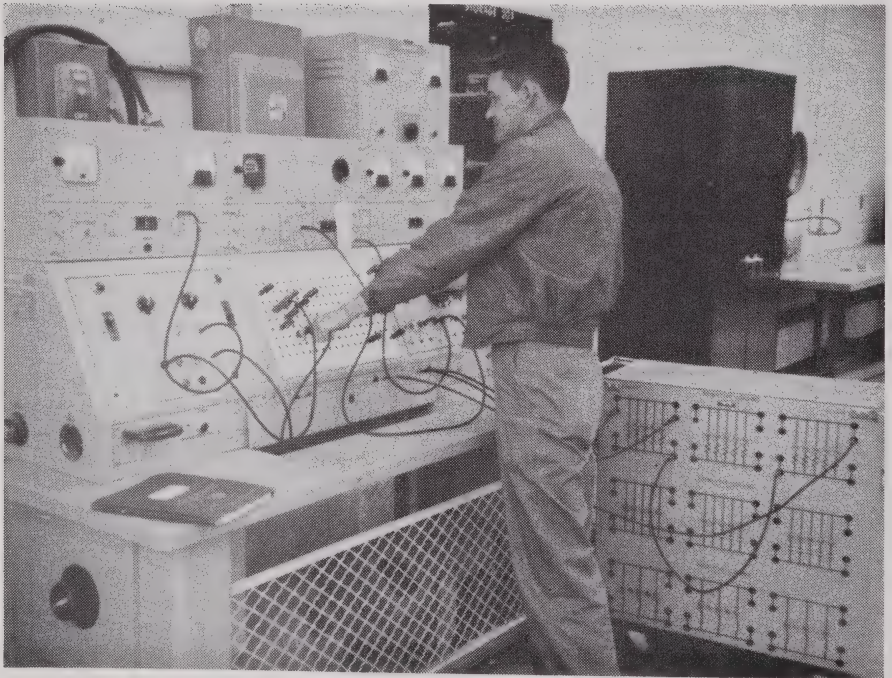


ELECTRONICS TECHNOLOGY

Technician

This post high school course is arranged to provide technical instruction with principles basic to the field of electronics technology.

The student will study the various phases of electricity, vacuum tubes, transistors, circuits and micro waves in step-by-step procedure. The student will receive related studies in math, drawing, report writing, physics and social science; problems will be worked out in the lab in a workable sequence suitable to his instructional needs.



C — Class Hours**L — Laboratory Hours****Cr. — Credit Hours****First Quarter****C—L—Cr.**

ET 401	Basic Electricity (DC)	5—4—7
ET 321	Technical Mathematics I	5—0—5
ET 311	Communicative Skills I	3—0—3
ET 331	Physics I	3—2—4
ET 314	Reading Improvement	2—0—2
ET 351	Industrial Organization & Management	4—0—4
		22—6—25

Second Quarter

ET 402	Basic Electricity (AC)	5—4—7
ET 322	Technical Mathematics II	5—0—5
ET 341	Technical Drafting I	1—4—3
ET 312	Communicative Skills II	2—0—2
ET 304	Machine Processes	0—4—2
ET 332	Physics II	3—2—4
		16—14—23

Third Quarter

ET 403	Basic Electronics	5—4—7
ET 323	Technical Mathematics III	5—4—7
ET 342	Technical Drafting II	1—4—3
ET 313	Communicative Skills III	3—0—3
ET 335	General Chemistry	4—2—5
ET 305	Industrial Specifications	3—0—3
		21—10—26

Fourth Quarter

ET 404	Circuit Analysis	5—6—8
ET 405	R. F. Energy	3—2—4
ET 324	Technical Mathematics IV	3—0—3
ET 353	Economics	4—0—4
ET 343	Technical Drafting III	2—4—4
		17—12—23

Fifth Quarter

ET 406	Special Circuit Design	5—10—10
ET 407	Transistor Theory	6—4—8
ET 334	Physics IV	3—2—4

Sixth Quarter

ET 408	U.H.F. and Microwaves	6—4—8
ET 409	Industrial Electronics	3—2—4
ET 410	Option — Special	5—10—10
		14—16—22

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

ET 401 Basic Electricity (DC) 5—4—7

Electron theory, electrical units, Ohm's law, resistance combinations, meter connections, magnetism and magnetic circuits, electric power, characteristics of electric conductors, inductance and capacitance, direct current generators, motors and controls, and use of common measuring and metering equipment are studied in this course.

ET 321 Technical Mathematics I 5—0—5

The real number system is developed as extensions of natural numbers, integers and rational numbers. Insight into the processes of arithmetic and algebra are provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, denominate quantities, vectors and the derivative.

ET 311 Communicative Skills I 3—0—3

This course is designed to aid the student in the improvement of self expression in both business and technical compositions. The approach to this course is functional with emphasis on grammar, diction, sentence structure, punctuation and spelling. This study is intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

ET 331 Physics I 3—2—4

This is a fundamental course which covers several of the basic principles of Physics. The divisions included are: solids and their characteristics, liquids in motion, and gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are also an integral part of this course.

ET 314 Reading Improvement 2—0—2

Instruction is given in techniques for improving speed and comprehension in reading. A brief analysis of the student's rate of reading is made on the basis of reading tests. Special projectors and instruments designed to aid in increasing speed and comprehension and visual span are used. Emphasis is placed on improving speed of reading and comprehension of technical material.

ET 351 Industrial Organization and Management 4—0—4

A study of principles of psychology that will help the student understand individual human behavior on the job. Motivation, intelligence and aptitude tests, learning, emotions, employee selection, supervision, job satisfaction and conflicts as related to employees will be studied. Attention will be given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker.

In addition, the student will be acquainted with methods in techniques and practices of modern management planning and organizing and controlling the operation of a manufacturing concern. The following major areas are studied: organization, marketing, purchasing, inventory control, production control, quality control, time study, cost accounting, personnel administration and labor relations.

Second Quarter

ET 402 Basic Electricity (AC) 5—4—7

Characteristics of alternating current waves, analysis of the behavior of alternating current components, phase and power factor, power measurement under balanced and unbalanced conditions in delta and wye connected systems, two-phase and three-phase systems, application of vector algebra in the analysis of series and parallel combinations of impedances.

ET 322 Technical Mathematics II 5—0—5

Study of the derivative is continued. Differentials and integrals are presented. Algebraic operations and operations of calculus are applied to linear, quadratic and polynomial functions and special equations of second degree. Applications

involving rates of change, maxima and minima, approximations, areas, volumes and work are considered. Complex numbers are introduced.

ET 341 Technical Drafting I

1—4—3

A course designed to provide fundamental knowledge of the principles of mechanical drafting and to develop basic skills and techniques in using drafting room equipment. It covers lettering, orthographic projection, dimensioning and geometric construction.

ET 321 Communicative Skills II

2—0—2

The basic fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

ET 304 Machine Processes

0—4—2

This course is being revised.

ET 332 Physics II

3—2—4

The major areas covered in this course are work, energy and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their application are also a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

Third Quarter

ET 403 Basic Electronics

5—4—7

Introduction to the technical concepts of electronic components and circuits, principles and characteristics of vacuum tubes and transistors. Principles of operation and applications of such basic electronic circuits as tuned circuits, power supplies, detectors, amplifiers and oscillators; fundamentals of radio receivers, cathode ray oscilloscopes and basic test devices and measuring instruments are covered in this course.

ET 323 Technical Mathematics III

5—0—5

Ideas of algebra and calculus are used in a study of trigonometric logarithmic and exponential functions. Polar coordinates are introduced. Complex numbers and vectors are considered further.

ET 342 Technical Drafting II

1—4—3

The student continues the study in orthographic projection. Topics covered in Technical Drafting I are reviewed and emphasized. He gains additional knowledge of the principles of auxiliary views, rotations, sections and conventions and intersections and developments. Methods and techniques of pictorial drafting, isometric, oblique and perspective representation are covered.

ET 313 Communicative Skills III

3—0—3

The purpose of the course is to develop the speaking skills with emphasis upon the dual role of speech as both a speaking and listening skill. Stress is also placed upon the growth in poise and confidence on the part of the student. Practice is provided through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development. Prerequisite: Communicative Skills II.

ET 335 General Chemistry

4—2—5

This course involves a study of the physical and chemical properties of substances, chemical changes, elements, compounds, gases, chemical combinations, weights and measurements, theory of metals, acids, bases, salts, solvents, solutions, and emulsions. In addition, a study is made of carbohydrates, electro-chemistry, electrolytes and electrolysis in their application of chemistry to industry.

ET 305 Industrial Specifications**3—0—3**

The basic understanding of various legal principles in the area of contracts and specifications as needed to progress in leadership and executive capacity is stressed. The proven methods of planning, writing and issuing specifications for the various phases of industrial operation are demonstrated to provide the basic information for the advanced application of these methods. Stress is placed on the relationship between good specifications and good relations between those who buy and sell, and the advantages of good specifications as a vital factor in our economic well being.

Fourth Quarter**ET 404 Circuit Analysis****5—6—8**

Study of layout and representation; problems in circuit design involving switches, relays and electronic components, schematic representation following practices used in Technical Drawing and Graphical Analysis, selection and proper designation of standard complexities of multiple purpose circuits, concentration of schematic representation of electronic equipment apart from the specific characteristics of each component, simplifying schematic diagrams for the purpose of analysis and study.

ET 405 R. F. Energy**3—2—4**

In this course the student will study oscillator circuit design, radio frequency power amplifiers, modulation, electro-magnetic waves, and transmission lines and antennas.

ET 324 Technical Mathematics IV**3—0—3**

Algebra and calculus are used in the study of plane and solid geometric figures. Topics include curve sketching, maxima and minima, plane areas, curve lengths, volumes and solids and surface areas. Some applications of first order differential equations and series representations of selected important functions are presented.

ET 353 Economics**4—0—4**

A course in economics surveying the basic economic concepts and facts as pertaining to the American economic system. Subjects covered are the free enterprise system, business organization, income distribution, labor, money, banking and the business cycle.

ET 343 Technical Drafting III**2—4—4**

A course in which the student becomes familiar with the symbols used in electrical and electronic circuits. Basic drawings are made in order to develop a clear understanding of circuit analysis and the ability to perform layout work; also, to obtain symmetry and balance in drawings. In addition, the student acquires an ability to read electrical wiring diagrams and to follow continuity of current flow as expressed in electrical blueprints.

Fifth Quarter**ET 406 Special Circuit Design****5—10—10**

This is a continuation of circuit analysis offered in the preceding quarter with special emphasis on design. Special study will be made of radar, industrial electronic units, servo systems, etc.

ET 407 Transistor Theory**6—4—8**

Introduction to transistors, transistor characteristics, transistor amplifiers and oscillators, transistor radio receivers, transistor television and electrical circuits and servicing transistor circuits.

ET 334 Physics IV**3—2—4**

Starting with a short study of acoustics, the students are presented the topics of refraction of light, lenses, dispersion, spectra, interference and diffraction. Emphasis is then given to elementary atomic theory, light radiation, x-rays, ionization, and nuclear fission.

Sixth Quarter

ET 408 Ultra-High Frequencies and Microwaves

6—4—8

This is a study of radar, time base and marker generators, UHF and Microwave generators, transmission lines and waveguides, UHF and microwave antennas and radar and microwave systems.

ET 409 Industrial Electronics

3—2—7

Study of time, constants and electronic timing circuits, photoelectric controls, welder and motor controls, synchros and servo-mechanisms, induction and dielectric heating applications in the field of industrial control and automation.

ET 410 Option-Special

5—10--10

The student will select a problem of his choice, subject to the approval of the teacher; do the necessary research, organize his findings, and present this as a term paper to the teacher.

TECHNICAL SECRETARY

Technician

This course is to be offered for the first time in September of 1963. At present, a detailed description of the course and the quarterly sequence is not available.

Tentative plans are to operate the course 6 hours per day for 4 quarters.

The objectives of this program will be as follows:

1. To provide the individual with technical related information which will acquaint them with the know-how to use technical terms as used in modern industries.
2. To develop definite skills in both technical and related areas involving the use of modern business machines and practices.
3. To acquaint individuals with industrial procedures.

AGRICULTURAL BUSINESS TECHNOLOGY

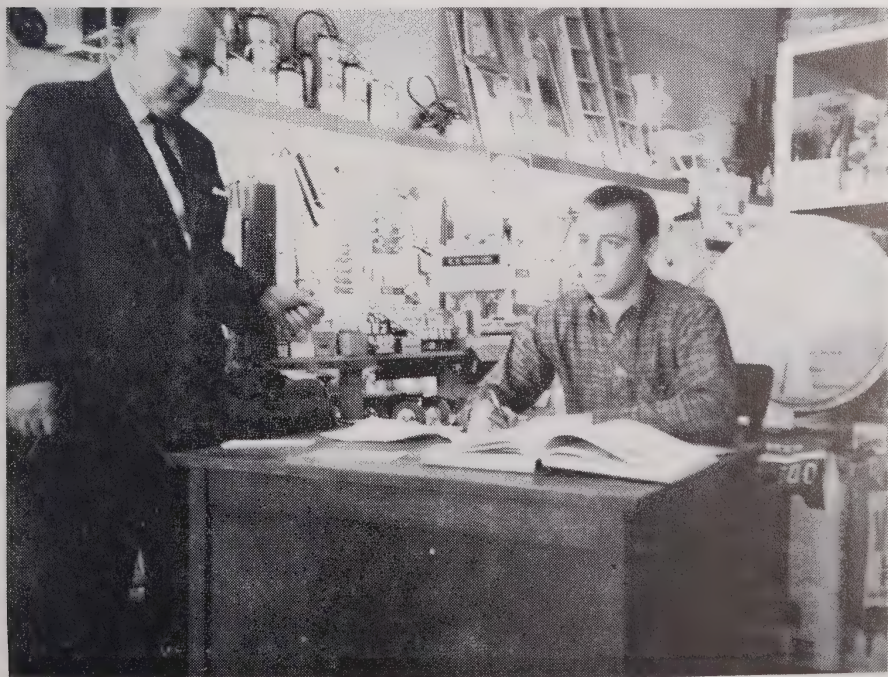
Technician

This curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business. In addition to the more specific courses in agriculture economics management, and business, certain basic courses are included to afford the student a rather broad education foundation.

Present-day agricultural firms are expanding both horizontally and in depth. They are experiencing rapid changes in technologies of production, sales, and management, in an increasingly competitive environment. Future employees of such firms must be prepared to understand these changes and adapt themselves accordingly.

This curriculum combines the knowledge of agriculture with business training to prepare the student for one of the many varied employment opportunities in agricultural business.

The successful completion of this curriculum should enable a person to assume responsibilities in an agricultural firm and to advance within such a business. Other job opportunities include: farm supply sales, farm



supply distribution, agriculture finance, agriculture sales promotion, and agriculture marketing.

The Agricultural Business program is offered for 6 hours per day for 6 quarters. Entrance requirements coincide with other technology courses offered at the Center. Agricultural Business Technology is a post high school program.

C — Class Hours	L — Laboratory Hours	Cr. — Credit Hours
First Quarter		C—L—Cr.
Agricultural Business Careers		1—0—1
Agricultural Business Math		2—4—4
Communicative Skills I		3—0—3
Drafting I		1—4—5
Economics		4—0—4
Animal Science		2—4—4
Library		0—5—0
		13 -17 -19
Second Quarter		
Agricultural Business I:		
Introduction to Agricultural		
Economic Analysis		5—0—5
Accounting I		3—2—4
Communicative Skills II		2—0—2
Marketing		5—0—5
Office Machines		0—2—1
Plant Science		2—4—4
Library		0—5—0
		17 -13 -21
Third Quarter		
Accounting II		2—4—4
Agricultural Business II:		
Agricultural Marketing		3—2—4
Agricultural Business III:		
Farm Business Management		5—0—5
Communicative Skills III		3—0—3
Soil Science		4—2—5
Library		0—5—0
		17 -13 -21
Fourth Quarter		
Agricultural Business IV:		
Agricultural Finance		3—2—4
Business Correspondence		3—2—4
Sales Development		3—0—3
Small Business Management		4—0—4
General Poultry Science		2—4—4
Reading Improvement		2—0—2
Library		0—5—0
		17 -13 -21
Fifth Quarter		
Agricultural Business V: Farm		
Record and Taxes		3—2—4
Advertising		3—0—3

Sales Management	3—0—3
Office Management	3—0—3
Business Law	5—0—5
Pesticides	2—4—4
Library	0—5—0

19-11-22

Sixth Quarter

Agricultural Business VI:	
Agricultural Policy	5—0—5
Agricultural Business VII:	
Agricultural Prices	5—0—5
Personnel Management	3—0—3
Tax Accounting	3—2—4
Farm Cooperatives	3—0—3
Agricultural Programs and Agencies	2—2—3
Seminar	0—5—0

21—9-23

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

Agricultural Business Careers	1—0—1
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A study of career opportunities in agricultural business and industry.

Agricultural Business Math	2—4—4
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Practice in rapid calculations of the fundamental operations, percentage in business, interest and bank discounts, compound interest, payroll and taxes, financial statements and special problems that confront the business world of today.

Communicative Skills I	3—0—3
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This course is designed to aid the student in the improvement of self-expression in both business and technical compositions. The approach to this course is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. This study is intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Drafting I	1—4—3
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A course designed to provide fundamental knowledge of the principles of mechanical drafting and to develop basic skills and techniques in using drafting room equipment. It covers lettering, orthographic projection, dimensioning and geometric construction.

Economics	4—0—4
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A course in economics surveying the basic economics concepts and facts as pertaining to the American economic system. Subjects covered are the free enterprise system, business organization, income distribution, labor, money, banking and the business cycle.

In addition, the following topics are covered: the role of the government in a democratic society, the constitution, Congress and the presidency, the federal court system, federal powers and function and the political party system.

Animal Science	2—4—4
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Basic principles of zoology and genetics as related to farm animals. The scientific study of all commercially important classes of farm animals.

Second Quarter

Agricultural Business I: Introduction to Agricultural Economic Analysis	5—0—5
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An introduction to economics, the functions of the economic system and agricul-

ture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main sources of change which affect agricultural firms.

Accounting I

3—2—4

Basic principles of accounting. Includes assets, liability, and net worth accounts, journalizing, posting, closing the books. Merchandizing accounts. Specialty journals. Classification of accounts. Controlling accounts.

Communicative Skills II

2—0—2

The purpose of the course is to develop the speaking skills with emphasis upon the dual role of speech as both a speaking and listening skill. Stress is also placed upon the growth in poise and confidence on the part of the student. Practice is provided through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development. Prerequisite: Communicative Skills I.

Marketing

5—0—5

A study of the relationship of marketing to business management and the American economy; the means and methods of marketing; marketing functions; the flow of goods; and the institutions, agencies and channels that do the work of marketing.

Office Machines

0—2—1

This course will present instructional material for use with the four types of adding and calculating machines — the full-keyboard adding listing machine, the ten-key adding listing machine, the rotary calculator, and the key-driven calculator.

Plant Science

2—4—4

The study of botany, bacteriology and science of growth and development of plants as compared with that of animals.

Third Quarter

Accounting II

A continuation of Accounting I.

Agricultural Business II: Agricultural Marketing

3—2—4

An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco.

Agricultural Business III: Farm Business Management

5—0—5

A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most net revenue. Relationship between size, and income of a farm. Review of procedures for evaluating the efficiency of the manager.

Communicative Skills III

3—0—3

The basic fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term. Prerequisite: Communicative Skills I.

Soil Science

4—2—5

Soil types; basic principles of efficient management of soils and the growing of crops; care and cultivation of the soil, fertilization and conservation of soil fertility.

Fourth Quarter

Agricultural Business IV: Agricultural Finance

3—2—4

Analysis of the capital structure of modern commercial agriculture with emphasis on the sources of credit. Application of farm management principles in choosing the amount and kind of credit a farmer should use. A review of lending institutions, repayment schedules and credit instruments. Practice in the procedure of evaluating farm resources with attention to information needed for resource valuation, appraisal farms and procedures, discounting and depreciation. A review of the historical development of credit programs and institutions in the United States.

Business Correspondence

3—2—4

A course in the principles, problems and procedures of writing business letters, and short informal reports. Types of letters, methods of obtaining and analyzing data, elements of design and composition, and effective dictation. Actual writing experience through use of problems and case situations drawn from successful business problems and practices.

Sales Development

3—0—3

Professional salesmanship as applied to all kinds of sales situations. Development of the student's ability to do a better job of selling is a specific objective. Emphasis is given to developing customer clientele, overcome objections, closing the sale and suggestion selling. (*)

Small Business Management

4—0—4

Study of business principles and management. Starting a business. Purchasing, merchandising and production. Business organization, financial operations, management problems.

General Poultry Science

2—4—4

Introduction to major phases of poultry production including the history of the industry; anatomy of the chicken; breeding principles; breeds and varieties; incubation, brooding, and rearing; feeding, housing and management; and marketing.

Reading Improvement

2—0—2

Instruction is given in techniques for improving speed and comprehension in reading. A brief analysis of the student's rate of reading is made on the basis of reading tests. Special projectors and instruments designed to aid in increasing speed and comprehension and visual span are used. Emphasis is placed on improving speed of reading and comprehension of technical material.

Fifth Quarter

Agricultural Business V: Farm Records and Taxes

3—2—4

An introduction to the basic principles involved in keeping accurate and useful farm and other agricultural business records. Practice in the use of both single-entry and double-entry accounts with emphasis in their use in making profitable decisions. A review of tax regulations and procedures emphasizing the usefulness of records in preparing tax returns.

Advertising

3—0—3

A study of the fundamentals of advertising. Its place and function; selling through advertising, advertising mechanics, mediums, and procedures.

Sales Management

3—0—3

Planning, organizing and controlling the sales operation. Functions of the sales manager, merchandise manager and marketing representatives in manufacturing, wholesaling, retailing and service establishments are analyzed. (**)

* Distributive Education course description.

** Distributive Education course description.

Office Management

3—0—3

Basic principles, problems and techniques of office management and organization. An analysis of office procedures and layout. Communication activities and office automation.

Business Law

5—0—5

An introductory study of the principles of business law. The nature sources and classification of law and court procedures. Laws of contracts, partnerships, corporations and property.

Pesticides

2—4—4

Types of chemicals and methods of use to eradicate pests of crops, livestock and agricultural products.

Sixth Quarter

Agricultural Business VI: Agricultural Policy

5—0—5

A review of the agricultural policy setting including population problems, and nature of agricultural production and the relationship to demand, supply and income. Outline of policy objectives such as efficiency in production, farm income and social welfare. An analysis of policies and programs for commercial agriculture: expansion of domestic and foreign consumption, development of new products, and reduction of supply by quotas, allotments, and other means. Discussion of the income implications of fewer farmers, storage programs and various payment programs. A review of programs designed to increase production efficiency: price information, farm credit programs, reclamation tenure, conservation and insurance. Description of programs designed for social welfare: aid for low income farmers, REA, area development and local government services and taxes.

Agricultural Business VII: Agricultural Prices

5—0—5

An introduction to the functions of prices in our economic system and the effects of changing price levels. The influence consumer demand has on prices through price and income elasticities. A review of the influence of cycles and timing of production along with an examination of the use of future commodity contracts. Application of the principles of price analysis to price control and parity programs. Familiarization with the various tools widely used in historical analysis and forecasting.

Personnel Management

3—0—3

Basic problems of employee-management relations, the process of recruitment, selection, employment, wage levels and methods, job studies and descriptions and employee rating systems. Special attention is given to the human phase of organization, personnel efficiency, handling personnel problems, developing work terms and labor relations. (*)

* Distributive Education course description.

Tax Accounting

3—2—4

A study of federal and state tax laws and their effect on payroll and accounting practices and procedures. Computing and paying wages and salaries; Federal and State income tax withholding; Social Security taxes; and other related problems involving personal and business tax situations.

Farm Cooperatives

3—0—3

A study of the principles and practices of farmer cooperatives. The organization, operation and management of farmers' purchasing, marketing and service cooperatives

Agricultural Programs and Agencies

2—2—3

A review of the public agriculture programs and agencies that provide service for agricultural producers. The objectives, organization, functions and services of these organizations.

Seminar

Reports and discussion of current topics in agriculture business and industry.

POULTRY SERVICES TECHNOLOGY

Technician

Technically trained people are required to meet the modern demands of the large poultry and livestock industries in North Carolina. Advanced technicians and skills are needed in production, processing, storage and marketing of poultry products.

The contents of this curriculum are designed to give students a good understanding of the fundamental knowledge of principles, methods, techniques and skills which are essential for successful employment in the poultry and livestock industries. Sound technical training is a requirement for successful employment in North Carolina's expanding poultry industry.

Occupational opportunities include such jobs as poultry fieldmen, poultry buyers, flock managers, feed mill managers, poultry inspectors, poultry salesmen, hatchery operators and livestock fieldmen.

The poultry services program is offered for six hours per day, five days per week, for six quarters.

Entrance requirements coincide with other technology courses offered at the Center. Poultry Services Technology is a post high school program.



C — Class Hours**L — Laboratory Hours****Cr. — Credit Hours****First Quarter****C—L—Cr.**

Poultry I: General Poultry Science	4—2—5
Communicative Skills I	3—0—3
Agricultural Business Mathematics	3—2—4
Animal Science	4—2—5
Drafting I	1—4—3
Library	0—5—0
	<hr/>
	15 -15 -20

Second Quarter

Poultry II: The Commercial Poultry Business	4—2—5
Poultry III: Poultry Nutrition	4—2—5
Communicative Skills II	2—0—2
Plant Science	4—2—5
Chemistry	4—2—5
Library	0—4—0
	<hr/>
	18 -12 -22

Third Quarter

Poultry IV: Commercial Broiler Business	4—2—5
Poultry V: Commercial Hatching and Egg Business	3—0—3
Agricultural Marketing	3—2—4
Farm Business Management	5—0—5
Library	0—5—0
	<hr/>
	19 -11 -22

Fourth Quarter

Poultry VI: Marketing Poultry Products	4—2—5
Poultry VII: Genetics (Poultry Breeding Applied)	5—0—5
Dairy and Beef Production	4—2—5
Physics I	3—2—4
Reading Improvement	2—0—2
Library	0—6—0
	<hr/>
	18 -12 -21

Fifth Quarter

Poultry VIII: Poultry Housing and Equipment	4—2—5
Poultry IX: Hatchery Management	4—2—5
Pesticides	4—2—5
Economics	4—0—4
Sales Development	3—0—3
Library	0—5—0
	<hr/>
	19 -11 -22

Sixth Quarter

Poultry X: Poultry Health	4—2—5
Soil Science	4—2—5
Swine and Sheep Production	3—2—4
Agricultural Policy	5—0—5
Industrial Organization and Management	3—0—3
Library	0—5—0
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	19 -11 -22

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

Poultry I: General Poultry Science

4—2—5

This is an introduction to the Science of poultry production. The major phases of the study include the history of the poultry industry; the anatomy of the chicken; the breeds and varieties; the breeding principles; the principles of incubation, brooding, rearing, feeding, housing and management; marketing poultry products; and the science of disease and parasite prevention and control.

Communicative Skills I

3—0—3

This course is designed to aid the student in the improvement of self expression in both business and technical compositions. The approach to this course is functional with emphasis on grammar, diction, sentence structure, punctuation and spelling. This study is intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Agricultural Business Mathematics

3—2—4

This course includes practices in rapid calculations of the fundamental operations, percentages in business, interest and bank discounts, compound interest, payroll and taxes, financial statements, special applications in agricultural measurements and special problems that confront the business world of today.

Animal Science

This course covers the basic principles of zoology and genetics as related to farm animals. The scientific study of all commercially important classes of farm animals is also included.

Technical Drafting I

1—4—3

This is a course designed to provide fundamental knowledge of the principles of mechanical drafting and to develop basic skills and techniques in using drafting room equipment. It covers lettering, orthographic projection, dimensioning and geometric construction.

Second Quarter

Poultry II: The Commercial Poultry Business

4—2—5

This is a review of the growth of the poultry and egg industries. The development of poultry farming as a business. Prices, markets and marketing procedures. Determining and controlling prices and costs of production. Choosing breeds and determining flock size, rate and time of production. Labor efficiency and other management factors. How to get started in commercial poultry farming.

Poultry III: Poultry Nutrition

4—2—5

An introduction to the objects and principles of poultry nutrition. Composition of plants and animals, and the digestion and metabolism. Measuring the usefulness or value of feeds. Use of animal and vegetable poultry feeds. Factors to consider in making a poultry ration. Feeding systems and practices. Feeding and management of young chickens, layers and breeders. Economics of poultry feeding.

Communicative Skills II

2—0—2

The purpose of the course is to develop the speaking skills with emphasis upon the dual role of speech as both a speaking and listening skill. Stress is also placed upon the growth in poise and confidence on the part of the student. Practice is provided through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development. Prerequisite: Communicative Skills I.

Plant Science

4—2—5

The study of botany, bacteriology and science of growth and development of plants as compared with that of animals.

Chemistry

4—2—5

This course involves a study of the physical and chemical properties of substances, chemical changes, elements, compounds, gases, chemical combinations, weights and measurements, theory of metals, acids, bases, salts, solvents, solutions, and emulsions. In addition, a study is made of carbohydrates, electro-chemistry, electrolytes and electrolysis in their application of chemistry to industry.

Third Quarter

Poultry IV: Commercial Broiler Business

4—2—5

An analysis of present commercial broiler production practices. Preferred breeds and crosses. Popular booking systems. The use of automatic equipment. Preferred feeding systems and methods. Feeding for the most favorable feed conversion ration. High energy rations and preferred calorie-protein rations. Determining the most profitable weight at which to sell. Contract broiler production. Prevention of diseases and processing plant condemnations.

Poultry V: Commercial Hatching and Egg Business

4—2—5

A review of the advantages and disadvantages of hatching egg production. Finding a hatching egg market. Choosing a breed and strain in demand. Management of the breeding flock. Feeding the breeders. Selecting, blood testing and vaccinating the breeders. Mating the breeders. Breeding flock replacement schedule. Care of, handling and delivery of hatching eggs.

Communicative Skills III

3—0—3

The basic fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term. Prerequisite: Communicative Skills II.

Agricultural Marketing

3—2—4

An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco.

Farm Business Management

5—0—5

A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review of the concepts of costs and the length of run in production. Practice in preparation enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most new revenue. Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager.

Fourth Quarter

Poultry VI: Marketing Poultry Products

4—2—5

A summary of the latest poultry products processing and marketing methods. Grading, processing, packing, storing, and marketing shell eggs. The egg products industry. Processing, grading, packing and merchandising poultry meat. Prices and market information. Promotion and advertising of poultry products. Egg and poultry legislation.

Poultry VII: Genetics (Poultry Breeding Applied)

5—0—5

An introduction to the principles of genetics. The physiology and mechanism of reproduction. Color characteristics and morphological characters of poultry.

Gene linkage and blood group antigens. Fertility, hatchability and viability. Meat and egg production characters. Selection methods.

Dairy and Beef Production

4—2—5

Principles of production of dairy and dairy products; and the breeding, feeding and managing of beef cattle.

Physics I

3—2—4

This is a fundamental course which covers several of the basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, and gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are also an integral part of this course.

Reading Improvement

2—0—2

Instruction is given in techniques for improving speed and comprehension in reading. A brief analysis of the student's rate of reading is made on the basis of reading tests. Special projectors and instruments designed to aid in increasing speed and comprehension and visual span are used. Emphasis is placed on improving speed of reading and comprehension of technical material.

Fifth Quarter

Poultry VIII: Poultry Housing and Equipment

4—2—5

An analysis of the principles of poultry housing and ventilation. Types of brooder, laying and breeder houses. The use of automatic ventilation. Popular brooding equipment. Automatic feeding and watering system. Egg washing equipment. High density brooding and laying houses. Automatic egg collectors. Feed mixing equipment.

Poultry IX: Hatchery Management

4—2—5

The development of the hatchery industry. The hatchery and its equipment. Flock selection and pullorum-typhoid testing. Factors influencing hatchability of eggs. Incubation principles and practices. Securing the hatching egg supply. Cost of producing baby chicks and factors affecting hatchery profits. Advertising and selling chicks. Organization of work in the hatchery. Hatchery correspondence and office procedure. Measuring chick quality. Prevention and control of diseases in the hatchery.

Pesticides

4—2—5

Types of chemicals and methods of use to eradicate pests of crops, livestock and agricultural products.

Economics

4—0—4

A course in economics surveying the basic economic concepts and facts as pertaining to the American economic system. Subjects covered are the free enterprise system, business organization, income distribution, labor, money, banking, and the business cycle.

In addition, the following topics are covered; the role of the government in a democratic society, the constitution, Congress and the presidency, the federal court system, federal powers and function, and the political party system.

Sales Development

3—0—3

Professional salesmanship as applied to all kinds of sales situations. Development of the student's ability to do a good job of selling is a specific objective. Emphasis is given to developing customer clientele, overcoming objections, closing the sale and suggestion selling.

Sixth Quarter

Poultry X: Poultry Health

4—2—5

The principles and practices of poultry disease and parasite prevention and control. The mortality problem and the nature of disease. The types of organisms causing poultry diseases. The methods of disease prevention and control. Nutri-

tional disorders and miscellaneous conditions. The major poultry diseases. Prevention and control of internal and external parasites. Controlling flock mortality.

Soil Science

4—2—5

Soil types; basic principles of efficient management of soils and the growing of crops; care and cultivation of the soil, fertilization and conservation of soil fertility.

Swine and Sheep Production

3—2—4

Principles and practices of swine and sheep production, including breeds and breeding; feeding; managing; and marketing.

Agricultural Policy

5—0—5

A review of the agricultural policy setting including population problems, the nature of agricultural production and the relationship to demand, supply and income. Outline the policy objectives such as efficiency in production, farm income and social welfare. An analysis of policies and programs for commercial agriculture: expansion of domestic and foreign consumption, development of domestic and foreign consumption, development of new products, and reduction of supply by quotas, allotments and other means. Discussion of the income implications of fewer farmers, storage programs and various payment programs. A review of programs designed to increase production efficiency: price information, farm credit programs, reclamation tenure, conservation and insurance. Description of programs designed for social welfare: aid for low income farmers, REA, area development and local government services and taxes.

Industrial Organization and Management

3—0—3

A study of principles of psychology that will help the student understand individual human behavior on the job. Motivation, intelligence and aptitude tests, learning, emotions, employee selection, supervision, job satisfaction and conflicts as related to employees will be studied. Attention will be given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker.

AIR CONDITIONING AND REFRIGERATION

Trade Preparatory

The Air Conditioning and Refrigeration trade program is designed to give the student both theoretical knowledge and practical experience in the domestic and commercial fields.

The domestic area includes basic theory, use of tools, gauges, and testing equipment used to service refrigeration and air conditioning units. Actual experience is provided on domestic freezers and refrigerators in the laboratory.

In the commercial area, theory, trouble shooting and installation of reach-in and walk-in units provided to equip the student for diagnosis and correction of service failure. Included is a study of the uses of air conditioning and refrigeration, temperature and humidity control, air circulation, cleaning and delivery, heat flow and heat calculations and air comfort standards.

Related instruction is provided in mathematics, blueprint reading, basic science and technical report writing to broaden the student's theoretical background and provide greater on-the-job proficiency.

C — Class Hours	L — Laboratory Hours	Cr. — Credit Hours
First Quarter		C—L—Cr.
ACR 201	Elements of Refrigeration	4—6—7
ACR 146	Fundamentals of Drawing and Equipment Reading	3—0—3
ACR 131	Basic Electricity	2—0—2
		<hr/> 9—6 -12
Second Quarter		
ACR 202	Domestic Refrigeration	4—6—7
ACR 136	Applied Electricity	3—0—3
ACR 141	Applied Drafting	2—0—2
		<hr/> 9—6 -12
Third Quarter		
ACR 203	Installation and Service of Commercial Refrigeration	4—6—7
ACR 204	Calculations and Heatloads for Commercial Refrigeration	2—0—2
ACR 131	Applied Science	3—0—3
		<hr/> 9—6 -12
Fourth Quarter		
ACR 265	Installation and Service of Cooling Conditioning Systems	2—8—6
ACR 206	Principles of Air Conditioning	2—0—2
ACR 207	Estimating for Refrigeration and Comfort Cooling	3—0—3
		<hr/> 7—8 -11

Fifth Quarter

ACR 208	Elements of Sheet Metal	4—6—7
ACR 116	Sales and Communication	2—0—2
ACR 209	Calculations and Heat Loss	3—0—3
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		9—6—12

Sixth Quarter

ACR 210	Duct and Fitting Fabrication	4—6—7
ACR 142	Applied Drafting	3—0—3
ACR 211	Automatic Controls	2—0—2
		<hr/>
		9—6—12

Seventh Quarter

ACR 212	Oil Burner Installation and Service	4—6—7
ACR 213	Automatic Controls	2—0—2
ACR 156	Personal and Management Records	3—0—3
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		9—6—12

Eighth Quarter

ACR 214	Gas Burners, Electric Heating Elements, and Liquid Heat Applications	4—6—7
ACR 215	Estimating for Heating Systems	2—0—2
ACR 151	Management Procedures	3—0—3
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		9—6—12

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

ACR 201 Elements of Refrigeration 4—6—7

This course consists of lectures, discussions and demonstrations. Not over one-third of the time is utilized in shop practice and experiments. Many fields are covered including essential terminology, laws of refrigeration, physical and chemical effects, materials and tools. The compression system, compressor construction, refrigerants, controls, absorption systems and hermetic units are a major portion of the course. Practice will be given in the use of tools in basic refrigeration jobs such as tube bending, flaring, soldering, refrigerant weighing and other service jobs.

ACR 146 Fundamentals of Drawing and Blueprint Reading 3—0—3

This is a course in the elements of drawing, including lines, rules, view of relationship, basic orthographic projection, sections and cutaways as applied to machine assemblies and basic floor plans and elevations. The course is designed primarily to provide the background information necessary before a study of the drawings and shop sketches of the trade can be undertaken.

ACR 131 Basic Electricity 4—6—7

This course covers the basic theories of electricity, types of electricity, methods of production and transmission and transforming of electricity. Such factors as the electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction, voltage, amperage, resistance, horsepower, wattage and transformers are major parts of the course.

Second Quarter

ACR 202 Domestic Refrigeration 4—6—7

In this course much time is spent in actual refrigeration service practice. Classroom work and demonstrations occupy approximately one-half of the time. Discussions, demonstrations, and practice will take place on residential cabinets using conventional, hermetic and absorption systems. Cabinet care, controls, system maintenance and system replacement will be stressed. Typical service problems will be worked out by each student. Complete rebuilding of domestic refrigerators, including cabinet refinishing, will be undertaken.

ACR 136 Applied Electricity***3—0—3**

In applied electricity the information presented in Basic Electricity is applied both in theory and in practice to the installation and service of refrigeration and conditioning systems. Transformers, motor, motor controls, system controls, electric valves, capacitors, wiring diagrams and electrical code, as it applies, are among the items taken up.

ACR 141 Applied Drafting**2—0—2**

A study of the prints of the trade such as machine prints, exploded prints, wiring schematics, floor plans and elevations, conditioning layouts and equipment layouts constitutes a major portion of this course. Practice in shop sketching, isometric sketching, and equipment layouts on prints or tracings is part of this course. It is expected that each student will become familiar with the prints of the trade and will become adept at reading them, as well as be able to produce the necessary shop sketches.

Third Quarter**ACR 203 Installation and Service of Commercial Refrigeration****4—6—7**

This course consists of study, demonstration and practice in the installation and service of commercial refrigeration systems. The various commercial applications of refrigeration are covered in classroom discussion before actual practice is given. The units covered include commercial cabinets, reach-in cabinets, walk-in coolers, display cases, frozen food cabinets, ice cream cabinets, water coolers, ice makers and other industrial applications. All standard types of compressors, condensers, coils, valves and controls are studied. Various systems should be installed and typical service problems worked out.

ACR 204 Calculations and Heat Loads for Commercial Refrigeration **2—0—2**

This course is the basic course for system design and contains the theory for service of commercial refrigeration systems. Many topics are studied among which are heat loads, heat leakage, coil and condensing unit capacities, coil types and design, coil usage, coil capacities, cooling loads, refrigerants, latent heat, specific heat, motor sizing and tube sizing.

ACR 131 Applied Science**3—0—3**

An introductory course in physics and its applications in the field of Air Conditioning and Refrigeration. It will cover systems of measurements, properties of liquids, solids and gases, temperatures, basic machines and friction. Related areas such as oxidation and reduction, reaction, acids, bases and salts will also be studied. Experiments and laboratory exercises will be utilized and integrated with the theory and classroom assignments.

Fourth Quarter**ACR 205 Installation and Service of Cooling Conditioning System** **2—8—6**

This course will consist of discussions, installations and service practice on the various types of air cooled and water cooled conditioning systems. Types of units used will include self contained and remote air cooled residential and small commercial units, water cooled units, water towers, chilled water systems, heat pumps, and automotive systems. Service of air movement systems and installation and service of standard controls are stressed. Service and storage of window units are included.

ACR 206 Principles of Air Conditioning**2—0—2**

In this course the history, theory, and factors affecting air conditioning are studied and discussed. The course will cover history of air conditioning, terminology, temperature measurement, air movement, humidity, psychometric properties, comfort zone, effective temperature, ducts, air diffusion, air cleaning, testing instruments, and heat loads. Information is presented here that can never be gained by ordinary work experience.

ACR 207—Estimating for Refrigeration and Comfort Cooling**3—0—3**

The student will be given practice in time and material take-offs from job drawing and specification lists. Methods of calculating overhead and other hidden costs are

discussed, and the application of these operating expenses to time and material to determine true costs is covered. Estimates are prepared covering true costs with necessary mark-up to insure workable profits for the refrigeration contractor.

Fifth Quarter

ACR 208 Elements of Sheet Metal

4—6—7

The student is introduced to the sheet metal shop with its rules and regulations concerning safety and workmanship. He learns to recognize and use safely the various hand tools and machines of the trade. Hand, machine, and fastening operations are correlated with flat layout and parallel line development in the formation of pipe intersection, straight duct, elbows, offsets and reducers as used in the conditioning trade.

ACR 116 Sales and Communication

2—0—2

Communications are usually the greatest weakness of the serviceman. This course should provide the background to enable him to overcome this weakness. The student should receive instruction in customer relations, human relations, business correspondence, reporting on service diagnosis and service work, group discussions and sales procedure.

ACR 209 Calculations and Heat Loss

3—0—3

In this course heat loss through various structures and heat needed to maintain comfort are studied. Practice is given in establishing the heating needs of various structures and in the selection of equipment to meet these needs. Heat distribution, both air and liquid, is studied and systems are designed to accomplish proper distribution. This course should be very closely correlated with the drafting course which comes in the following quarter.

Sixth Quarter

ACR 210 Duct and Fitting Fabrication

4—6—7

The student is given practice in fabrication of duct systems closely correlated with the layout as designed in the drafting section. Instruction and practice are given in radial and triangulation development as used in the fabrication of duct systems and fittings necessary to conditioning systems.

ACR 142 Applied Drafting

3—0—3

A review of floor plans and elevations, both domestic and commercial, is the first item in this course. Tracing of floor plans and copies of portions of plans and elevations are made. Information and plans developed in the course in calculations and heat loss are used in studying and understanding the design of both forced air and liquid systems. Special attention is given to shop sketches of equipment placement and heating distribution systems.

ACR 211 Automatic Controls

2—0—2

This section is designed to prepare the student for the study of heating devices. The fundamentals of controls, definitions, fundamentals of measurement, electric controls, pneumatic controls and controls for domestic heating are covered in theory so they may be applied in the laboratory section.

Seventh Quarter

ACR 212 Oil Burner Installation and Service

4—6—7

This course involves study and practice in the installation and servicing of equipment using high pressure, low pressure, jet and vaporizing burners. The installation and service of various oil burning equipment controls is studied. Actual practice is given in "trouble shooting" servicing of oil burners, fans, pumps, and their controls under typical working conditions. Service department stock, tools, and procedure should be an integral part of the instruction.

ACR 213 Automatic Controls

2—0—2

This course, a continuation of Automatic Controls, covers zone controls, unit

heater and ventilator controls, commercial fan system controls, commercial refrigeration controls and radiant panel controls.

ACR 156 Personal and Management Records

3—0—3

The records that a serviceman needs to keep both for himself and his employer are the basis of this course. They include time and material records, service call diagnosis and repair records, standard time and material estimates for service jobs, accident records, insurance records and personal tax records. Parts lists, withdrawal slips, inventory records and parts and material orders are also studied.

Eighth Quarter

ACR 214 Gas Burner, Electric Heating Elements, and Liquid Heat Applications

4—6—7

The student studies and receives practice in servicing and installing gas burners and electric heating elements and their controls. The applications of various heating devices in liquid heating and their controls are studied. While not a course in steamfitting, the principles of installation of hot water and low pressure steam boilers with their controls, pumps and coils are covered. The course also includes the actual hookup of a small boiler.

ACR 215 Estimating for Heating Systems

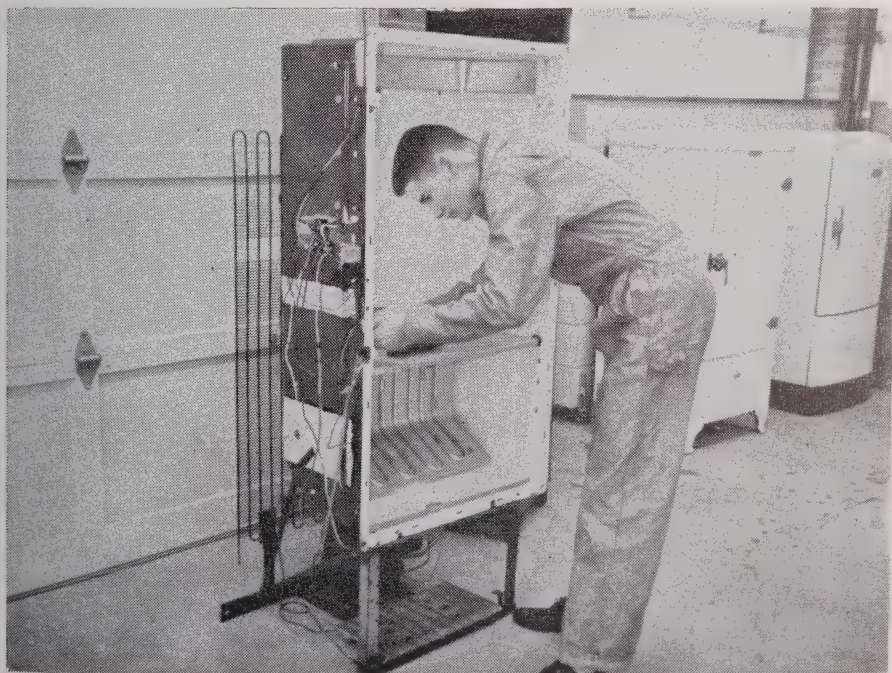
2—0—2

Time and material take-offs of ductwork and distribution systems, actual cost analysis, and profit percentage mark-ups for forced air and liquid heat are studied both for new installations, replacements and repairs to systems. Operational cost estimates are also a part of the course covered.

ACR 151 Management Procedures

3—0—3

This course is designed for those who will enter management or plan to establish their own business. Among the topics that will be taken up are problems of small business, basic business forms and records, financial problems, ordering and inventory and employer-employee relations.

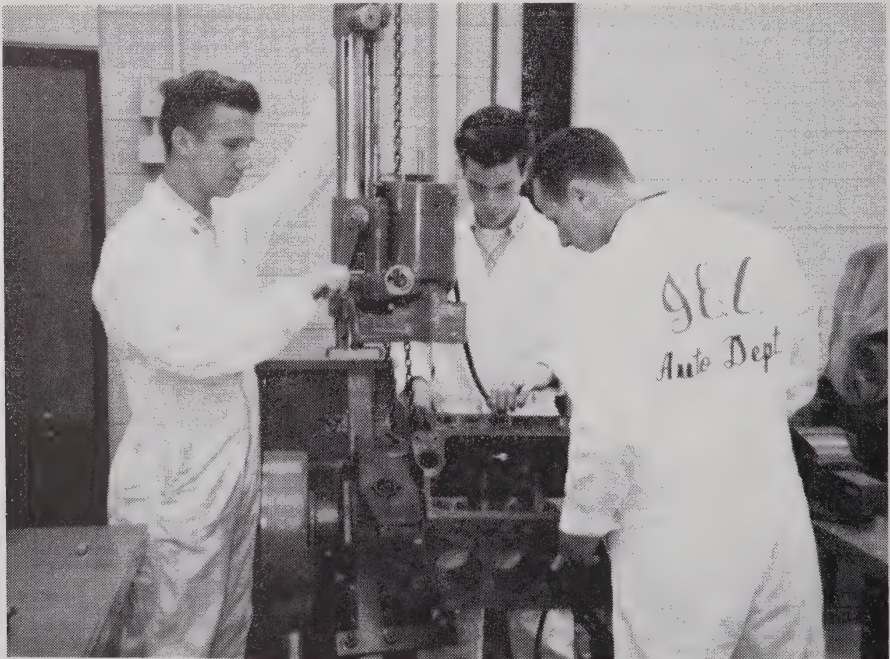


AUTOMOTIVE MECHANICS

Trade Preparatory

This is a two year course. Instruction is given in the fundamentals and principles for the maintenance and service of passenger cars. Shop and related class instruction will give the student a good opportunity to become familiar with overhauling engines, transmissions, rear ends, starters, generators, distributors, carburetors, fuel pumps, and other assembly and accessory units.

C — Class Hours	L — Laboratory Hours	Cr. — Credit Hours
First Quarter		C—L—Cr.
AM 201 Automotive Shop Practice		2—6—5
AM 121 Mathematics I		2—0—2
AM 131 Applied Physics I		1—2—2
AM 114 Reading Improvement		2—0—2
		7—8—11
Second Quarter		
AM 202 Automotive Engines		2—6—5
AM 122 Mathematics II		2—0—2
AM 132 Applied Physics II		1—2—2
AM 146 Blueprint Reading I		2—0—2
		7—8—11



Third Quarter

AM 203	Automotive Electrical Systems	4—6—7
AM 133	Applied Physics III	1—2—2
AM 147	Blueprint Reading II	2—0—2

7—8—11

Fourth Quarter

AM 204	Automotive Fuel Systems	5—6—8
AM 111	Communication Skills	2—0—2
AM 137	Welding For Automotive Repair	0—2—1

7—8—11

Fifth Quarter

AM 205	Automotive Power Trains	4—8—8
AM 151	Industrial Organization & Management	7—0—3

7—8—11

Sixth Quarter

AM 205	Automotive Chassis: Suspension & Steering	3—6—6
AM 207	Automotive Chassis: Brakes	2—2—3
AM 152	Human Relations	2—0—2

7—8—11

Seventh Quarter

AM 209	Automotive Testing and Diagnosis Procedures	4—8—8
AM 210	Automotive Air Conditioning	3—0—3

7—8—11

Eighth Quarter

AM 211	Automotive Service and Repair	3—8—7
AM 161	Automotive Research and Report	2—2—3

5—10—10

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

AM 201 Automotive Shop Practice 2—6—5

This introductory course of the automotive trade curriculum is designed to give the student a thorough knowledge of: automotive hand tools, safe use of these tools, and proper maintenance; the proper operation of power driven automotive equipment, maintenance, adjustment, and storage; and the use and care of the various hand measuring devices needed in automotive work. The course stresses safe shop practice and is concluded with an overview of the principal division of the modern automobile and its functions.

AM 121 Mathematics I 2—0—2

For students with insufficient knowledge of basic mathematics, this course provides a review of fundamental number concepts and operations to the degree of depth needed by the individual student for success in the automotive trade. Operations with common and decimal fractions, percentage, measurement and calculations with various units of measure, powers and roots and the applications of ratio and proportion are the principal topics studied.

AM 131 Applied Physics I 1—2—2

A course of conference and laboratory work, completely arranged to give the student an application of the scientific method and a working knowledge of basic information about the structure and properties of the forms of physical matter. Some of these will be demonstrated and some re-discovered by the student to emphasize to him the value of the human faculty of curiosity in learning about the

physical universe. Attention and practice will be devoted to measurement systems, calibration and accuracy in reading and computing data.

AM 114 Reading Improvement

2—0—2

This course has the specific purpose of training the student to read more rapidly and accurately, since it has been well established that such concentrated effort can improve the student's ability to comprehend what is read. A special training machine is used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement and principles of vocabulary building are stressed.

Second Quarter

AM 202 Automotive Engines

2—6—5

This course is a complete study of the construction and operation of the components of the automotive engine. The student will learn to test engine performance for all engine types; servicing and maintenance for pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing of failure and defects in the various engine mechanisms.

AM 122 Mathematics II

2—0—2

A course for the special applications of algebraic principles and geometric concepts as generally needed in understanding calculations, formula, and various mechanisms used in the automotive trade. Provision is made for those students who may wish more emphasis and practice in the forward presentations of algebra and geometry to broaden their understanding for technical work.

AM 132 Applied Physics II

1—2—2

Because of the importance of the electrical system as an automotive component, this course is intended to help the student understand the underlying principles governing magnetism, electricity, and the varied practical services of electrical current. The course will feature the generation of electric current, both a.c. and d.c., control and measurement, with applications to various types of equipment.

AM 146 Blueprint Reading I

2—0—2

The purpose of the course is to assist the student to become familiar with the language of blueprints as a kind of universal trade language. The course will include: processes of reproduction of prints; meaning of the various lines and line combinations; kinds of views and their arrangement and applications; dimensioning standards, scales, dimensioning procedures and notes; and the use of sectioning.

Third Quarter

AM 203 Automotive Electrical Systems

4—6—7

This course covers the function of the electrical system and its components; battery cranking mechanism, generator, ignition, accessories, and wiring. It also includes the construction, operation, and testing of batteries; use of special equipment for charging; construction; circuits; operation and testing of cranking mechanism and controls; generator functions and operation; regulation and adjustment; mechanical and electrical components of the ignition system; special tools for adjustment, and testing components of accessory and warning device mechanisms.

AM 133 Applied Physics III

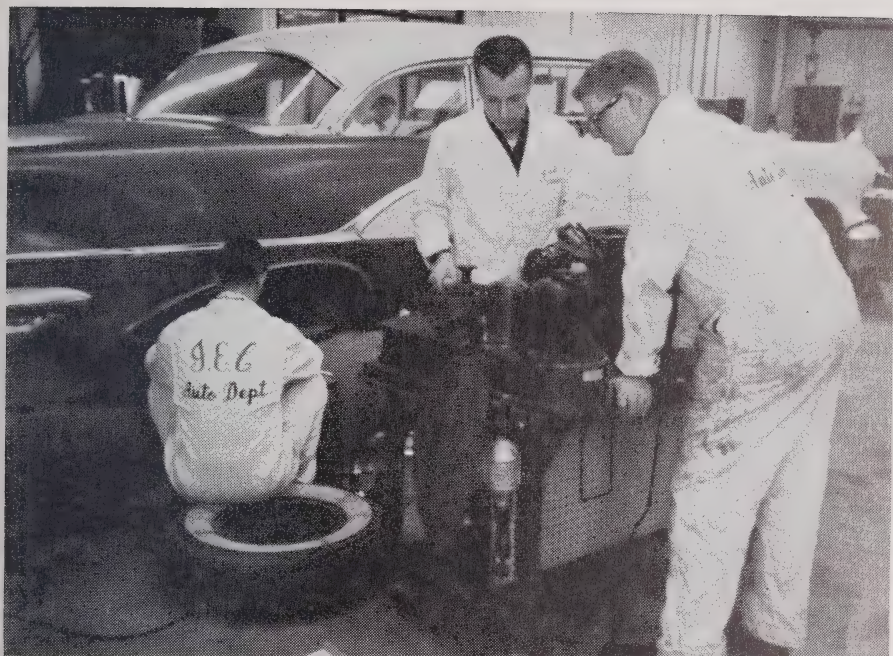
1—2—2

This is a course to provide the student with the fundamental scientific concepts regarding the operation of natural forces, the application of energy to mass, Newton's Laws, linear and rotary motion, acceleration, impact, inertia and others. The effect of several forces, operating as vector quantities, is studied as well as the mathematical definitions of work and power, and the units of measure of energy.

AM 147 Blueprint Reading II

2—0—2

This course applies the principles learned in the course, Blueprint Reading I, to the automotive field to enable the student to understand drawings, sketches, and charts



of all automotive systems, tools, equipment and various assemblies so that he can properly use service manuals, schematics and diagrams, and various kinds of trade literature.

Fourth Quarter

AM 204 Automotive Fuel System

5—6—8

The student will receive intensive training in the operation of various types of automotive fuel systems. Characteristics of fuels and types of fuel systems for which they are best adopted are a part of the training. The special tools and testing equipment for fuel systems are studied. The requirements and functions of various component parts are examined in detail, including pumps, carburetors, auxiliary devices, and intake and exhaust systems. The components of special fuel systems are also given some attention.

AM 111 Communication Skills

2—0—2

Some attention is given in this course to a brief review of English grammar, spelling, and punctuation. Concentrated effort will be applied to the fundamentals of good writing, sentence structure, proper development of descriptive reporting, and the mechanics of report construction. Practice in writing letters and the various report forms will be given and some time will be devoted to oral speech and note taking.

AM 137 Welding For Automotive Repair

0—2—1

This course will consist entirely of demonstration by the instructor and practice by student in the welding shop. Safe and correct methods of assembling and operating the welding outfit will be emphasized. Practice will be given for surface welding, bronze welding, silver brazing, and flame cutting methods, since these operations are applicable to automotive repair work.

Fifth Quarter

AM 205 Automotive Power Trains

4—8—8

The student will be given training consisting of a detailed analysis of the components of the automotive power train system, with the emphasis on identification of

troubles which develop in these components and the correct servicing and repair. Included are: types of clutches; clutch operation; inspection and service-operation of the various types and conversions; service and repair; and the operation, diagnosis of problems, and servicing for drive lines, rear axles and differentials.

AM 151 Industrial Organization and Management

3—0—3

This is a study of the principles of psychology as applied to business. Motivation, learning, emotions, employee selection, supervision, job satisfaction and conflicts are studied. Major emphasis is placed on the following: organization, marketing, purchasing, inventory control, production control, quality control, personnel, administration and labor relations.

Sixth Quarter

AM 206 Automotive Chassis: Suspension and Steering

3—6—6

A course in the principles and functions of the component parts of the automotive chassis. Practical job instruction will be given in the adjustment and repair of the suspension and steering systems including: types of springs, front and rear suspensions, shock absorber servicing, principles and servicing of steering systems, types of power steering linkage, front end adjustment, and servicing conventional and power steering gear assemblies.

AM 207 Automotive Chassis: Brakes

2—2—3

This course provides the student with instruction for understanding the principles involved in braking and for practical knowledge of various types of brakes and braking systems; proper adjustment and servicing of brakes, methods of repairing brakes and lines; and special attention to problems in power brake service.

AM 152 Human Relations

2—0—2

The purpose of the course is to help the student acquire greater understanding of his relations to other persons through learning and applying some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Seventh Quarter

AM 209 Automotive Testing and Diagnosis Procedures

4—8—8

The emphasis in this course is on the shop procedures necessary in determining the nature of trouble developed in all the component systems of the automobile. Extensive use of testing equipment will be made on as many actual problem situations as the instructor can make available. Much practice will be provided the student to consult various shop manuals issued by manufacturers to acquaint the student with procedures for handling problems such as are common to on-the-job experience.

AM 210 Automotive Air Conditioning

3—0—3

This course is a general introduction to the scientific principles involved in refrigeration and a study of the assembly of the components and connections necessary in the mechanism, the methods of operation, and control, and the proper handling of refrigerants in charging the system.

Eighth Quarter

AM 211 Automotive Service and Repair

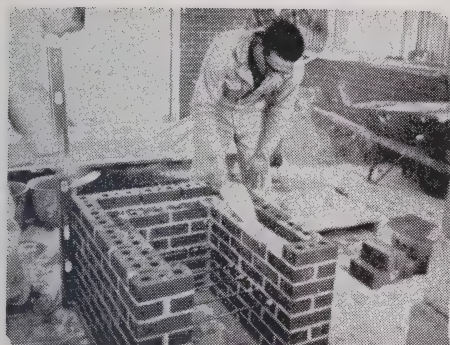
3—8—7

The plan for this course is to give the student considerable opportunity to practice the principles and techniques learned in previous courses by means of service and repair work that can be made available. A close simulation to an actual automotive shop situation will be maintained and effort will be made to give the student a full range of testing and servicing experience.

AM 161 Automotive Research and Report

2—2—3

The program for this course is designed to afford the student an intensive study and work problem for which he will need to do a certain amount of research in available manuals and references, and to perform certain tests and diagnosis to work out the practical solution under the supervision of the instructor. Finally, he will draft and put into good form a full report of this problem and its solution.



BRICKLAYING

Trade Preparatory

The total length of the course is 540 hours. It is designed to give the student a comprehensive knowledge of the Bricklaying trade. The student will get the related mathematics and blueprint reading which will enable him to do the job.

The laboratory work will enable the student to apply his knowledge in developing the skills of the trade.

C — Class Hours		L — Laboratory Hours	Cr. — Credit Hours
First Quarter			C—L—Cr.
201 BRK	Bricklaying I		6—6—9
121 BRK	Mathematics I		2—0—2
146 BRK	Blueprint Reading I		1—0—1
			9—6—12
Second Quarter			
202 BKR	Bricklaying II		5—6—8
122 BRK	Mathematics II		2—0—2
147 BRK	Blueprint Reading II		2—0—2
			9—6—12
Third Quarter			
203 BRK	Bricklaying III		4—6—7
123 BRK	Mathematics III		2—0—2
148 BRK	Blueprint Reading III		3—0—3
			9—6—12

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

BRK 201 Bricklaying I **6—6—9**

This course is designed to give the student a history of the bricklaying industry. Clay and shell brick, mortar, laying foundations, laying bricks to a line, bonding, and tools and their uses will be studied in this course. The laboratory work will give the student practical experience in applying the knowledge learned in the classroom.

BRK 121 Mathematics I**2—0—2**

This course is designed to give the student a review in addition, subtraction, multiplication and division of common fractions and decimal fractions and their use in construction work. Percentages, interest, and weights and measures will be studied.

BRK 146 Blueprint Reading I**1—0—1**

This course is designed to introduce the student to the reading of blueprints of simple elementary structures.

Second Quarter**BRK 202 Bricklaying II****5—6—8**

This course is designed to give the student information and practical application of that information in mortar for walls, chimneys, foundations, etc., expansion strips, wall ties, calking, cutting limestone, starting of bonds, construction of arches, cavity wall construction, etc.

BRK 122 Mathematics II**2—0—2**

This course is designed to give the student knowledge and application of measurements in establishing brick walls, mortar, chimneys, fireplaces, steps, concrete footings, etc.

BRK 147 Blueprint Reading II**2—0—2**

The student will study the blueprint of a one-car frame garage for floor plans, foundation, doors, windows, roofs, sills, and construction details, etc.

Third Quarter**BRK 203 Bricklaying III****4—6—7**

This course is designed to give the student study in the practical application of layout and erection of reinforced grouted brick masonry lintels, story pole and batter boards, fireplaces, glazed tile, panels, decorative stone, granite, marble, adhesive terra cotta and modular walls with modular windows.

BRK 123 Mathematics III**2—0—2**

This course is designed to give the student practical application of his mathematical knowledge in estimating concrete walls, concrete floors, concrete stairs, concrete walls, septic tanks, wood lath and lathing, plaster, stucco, rubble stone, adhesive terra cotta and quantities of modular masonry units.

BRK 148 Blueprint Reading III**3—0—3**

This course is designed to give the student experience in reading more advanced blueprints. Blueprints of a five room house will be studied with emphasis on the plot plan, basement plan, footing, walls, columns, girder joists, doors and window frames, pilasters, chimneys, stairs, plumbing, heating and electricity.

CUTTING (Furniture Fabrics)

This course covering 320 hours offers the student an opportunity to become familiar with the different types of fabrics, how to cut fabrics to the best advantage so that fabric can be saved where possible and how to correctly measure frames and make patterns. This course is set up to give a lot of practical experience. Each student will learn:

1. Cutting with shears
2. Drawing patterns on upholstery materials from pre-drawn patterns
3. Arranging cloth in layers on cutting table in order to cut several patterns in one operation
4. Working with bare frames
 - a. Taking measurements for pieces to be cut
 - b. Short cuts for saving material
 - c. Arranging pieces on paper so to save as much material as possible
5. After material is cut
 - a. Why we mark pieces
 - b. Where to mark pieces to guide sewers
 - c. Understanding how much allowance to be figured for seams that are to be sewn
 - d. How to fold cut unit for sewer
6. How to cut striped and figured materials to match and how much material to allow for matching
7. How to cut loose cushions



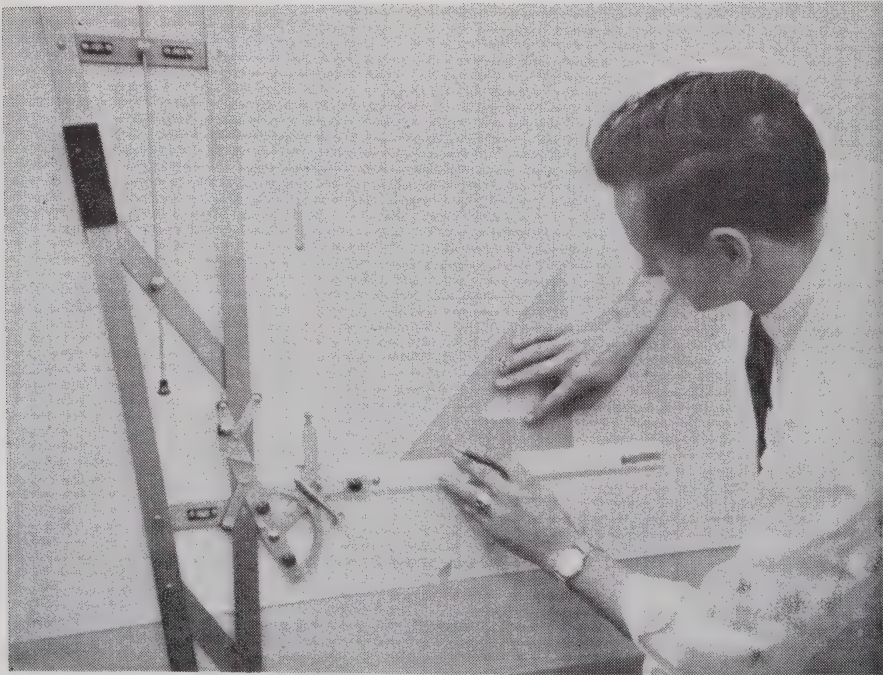
DRAFTING

Trade Preparatory

This is a two year course. In the first section of this course, the major emphasis is on giving students a thorough understanding of the fundamental principles of drafting; use and care of drafting equipment, measurements, lettering problem solving with descriptive geometry, three dimensional visualization and sketching, projections, detailing, drawing reproduction, translation of ideas into drawing based on the A.S.A. standards, and general drafting practices.

The second section explores the various fields of specialized drafting, and moves into more advanced areas of specification which the student has chosen or is inclined to pursue. Included in the program are advanced drafting, elementary perspective projection and basic rendering techniques.

The courses are arranged in a sequence that give the student technological and special courses as they are needed to correlate their laboratory experience.



C — Class Hours	L — Laboratory Hours	Cr. — Credit Hours
First Quarter		
D 201	Drafting I	C—L—Cr. 3—6—6
D 126	Plane and Solid Geometry	4—0—4
D 111	Reading Improvement	2—0—2
		<hr/> 9—6—12
Second Quarter		
D 202	Drafting II	3—6—6
D 127	Algebra I	4—0—4
D 112	Communication Skills	2—0—2
		<hr/> 9—6—12
Third Quarter		
D 203	Drafting III	2—6—5
D 128	Algebra II	3—0—3
D 152	Human Relations	2—0—2
D 113	Report Writing	2—0—2
		<hr/> 9—6—12
Fourth Quarter		
D 204	Drafting IV	2—6—5
D 205	Drafting Analysis	2—0—2
D 126B	Descriptive Geometry	3—0—3
D 129	Trigonometry	2—0—2
		<hr/> 9—6—12

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

D 201 Drafting I **3—6—6**

An introduction to drafting, the drafting room, and the study of drafting practices. Instruction is given in the selection, use and care of instruments, single-stroke lettering, applied geometry, free-hand sketching consisting of orthographic and pictorial drawing, and the orthographic projection, reading, and instrument drawing of principal view.

D 121 Plane and Solid Geometry **4—0—4**

The student will be given the patterns of traditional geometric concepts in a new approach by developing the normally innate abilities of the individual to visualize spatial relations. The patterns of logical proof of geometric ideas and relationships will receive some attention, but grouped into somewhat more practical arrangements for purposes of the draftsman.

D 111 Reading Improvement **2—0—2**

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. The tachistoscope is used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Second Quarter

D 202 Drafting II **3—6—6**

Methods of reproduction are studied as the student is introduced to the "working drawing." American Standards Association practices in dimensioning are emphasized in the study of dimensioning and note practices, and the theory of orthographic projection principles in the study of single (primary) and double (oblique) auxiliary views.

D 127 Algebra I**4—0—4**

Algebra I is designed to acquaint the student with the fundamental concepts and operations of basic algebra. The historical background and evolution of the number system is introduced and related to its present day use. Basic operations of addition, subtraction, multiplication, and division are covered in depth and related to the solution of various algebraic functions. Considerable time is spent in the solution of simple first order equations, use of letters and signs, grouping, factoring, exponents, and the setting up of ratios, proportions, and variations. Those laws, axioms, and postulates, relative to basic algebra are stated and discussed in detail.

D 112 Communication Skills**2—0—2**

Development of the trainee's ability to communicate effectively with other individuals through the medium of good language usage in speaking and writing, to think more clearly, and to reason more forcefully in work problems pertaining to his job.

Third Quarter**D 203 Drafting III****2—0—5**

The trainee will study simple and successive revolutions and their applications to practical problems. Sections and conventions will be studied and both detail and assembly sections will be drawn. Intersections and developments will be studied by relating the drawing to the sheet metal trades. Models of the assigned drawings will be made from construction paper, cardboard, or similar materials as a proof of the solution to the problems drawn.

D 128 Algebra II**3—0—3**

This course embodies solutions of algebraic equations graphically as well as algebraically. It presents functions of sets of numbers by pictorial graphs showing the relationships of number sets. In the solutions of simultaneous equations and methods of addition, subtraction, substitution and comparison are applied. In the treatment of exponents, definitions of base, power, and exponent are included as well as operations involving multiplication, division, addition, subtraction. Operations with radicals include simplification, rationalization, addition, subtraction, multiplication, and division. Solutions of quadratic equations are presented by the methods of: (1) factoring, (2) completing the square, and (3) quadratic formula. Logarithms are defined and complete operations are incorporated, including use of tables and the process of interpolation.

D 152 Human Relations**2—0—2**

The purpose of the course is to help the student acquire greater understanding of his relations to other persons through learning and applying some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

D 113 Report Writing**2—0—2**

Brief review of English grammar, spelling, and punctuation. Concentrated effort will be applied to the fundamentals of good writing; sentence structure, proper development of descriptive reporting, and the mechanics of report construction. Practice in writing letters and various report forms will be given and some time will be devoted to oral speech and note taking.

Fourth Quarter**D 204 Drafting IV****2—6—5**

Methods of drawing and projecting axonometric, oblique, and perspective drawings will be studied with emphasis on the practical applications of pictorial drawings. Various methods of shading will be introduced and dimensioning and sectioning of oblique and axonometric pictorials will be done.

D 205 Drafting Analysis**2—0—2**

The trainee will make an analysis of the various drafting field options offered in the Center. This analysis will include selected reading assignments concerning the options. A study of the job descriptions concerning those areas in the **Dictionary of Occupational Titles**, a study of blueprints in the option fields, and preparation of sketches illustrating major differences in the types of drawings.

D 126B Descriptive Geometry**3—0—3**

Introduction to graphic analyses of space problems with basic mathematical proofs. The problems deal with point, line, and plans relationships and theorems of solid geometry.

D 129 Trigonometry**2—0—2**

Practical applications of trigonometry beginning with the fundamental concepts basic to understanding trigonometry through applications of the oblique triangles will be studied. Variations and graphs of the trigonometric functions, inverse trigonometric functions and trigonometric equations will be introduced and applied to practical problems in drafting.

TENTATIVE ELECTRICITY PROGRAM

Trade Preparatory

The present plans for this program are for the course to run 3 hours per day for 6 quarters. Course descriptions and outlines are incomplete at this time. The tentative quarterly breakdown is as follows:

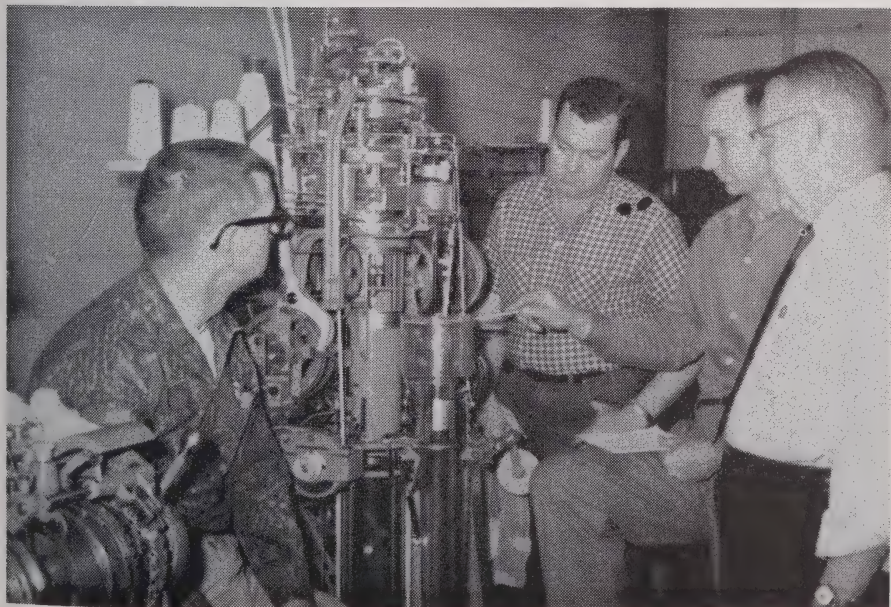
C — Class Hours	L — Laboratory Hours	Cr. — Credit Hours
First Quarter		C—L—Cr.
Fundamentals and Theory of Electricity		5—6—8
Writing I		2—0—2
Related Mathematics I		2—0—2
		<hr/> 9—6—12
Second Quarter		
Circuits, Methods & Materials, low voltage lighting		5—6—8
Writing II		2—0—2
Related Mathematics II		2—0—2
		<hr/> 9—6—12
Third Quarter		
Direct & Alternating Machinery & Circuits		5—6—8
Physics		2—0—2
Related Mathematics III		2—0—2
		<hr/> 9—6—12
Fourth Quarter		
Transformers, Fluorescent Lighting and Service Entrances		5—8—9
Human Relations		2—0—2
		<hr/> 7—8—11
Fifth Quarter		
Power Supplies & Relating Machinery		5—8—9
Industrial Development		2—0—2
		<hr/> 7—8—11
Sixth Quarter		
Control Circuits & Amplifier Circuits		6—6—9
Drafting		3—0—3
		<hr/> 9—6—12

KNITTING MACHINE FIXING

Trade Preparatory

This one year course of study is designed to give the student a comprehensive knowledge of the knitter fixing trade. The student will master the basic skills of machine fixing on different types of machines, tools, and repair operations. Listed below are some of the main points of instruction:

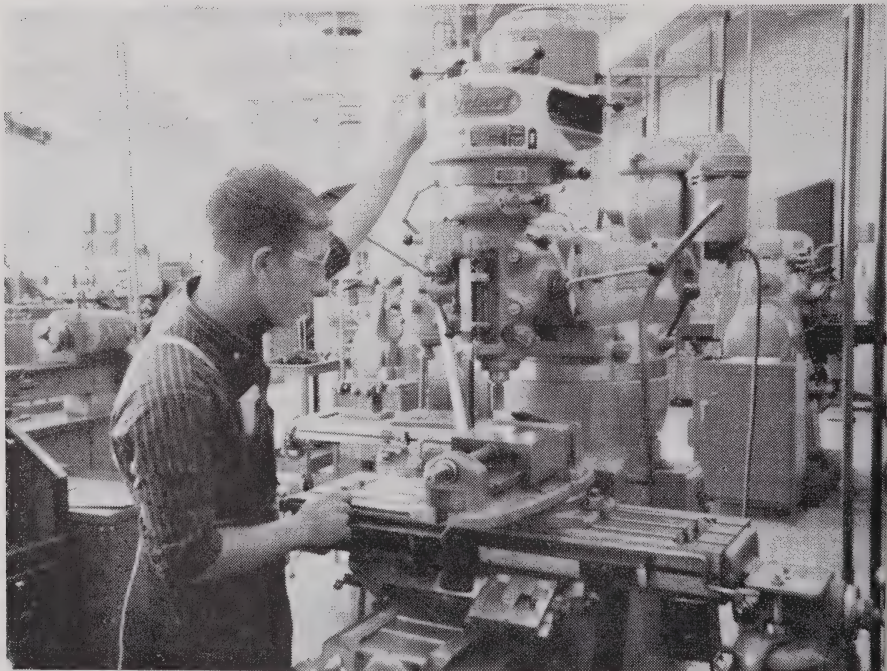
- Mill Relationship
- Mill Safety
- Stitch Formation
- Machines
- Make Up
- Top
- Body
- Heel
- Feet
- Ring Toe and Toe
- Looper Line and Clip
- Replacement of Parts and Attachments, Purpose
- Identify Parts
- Driving Mechanism
- Main Drum
- Stripper Drum
- Dismantling and putting together of machines
- Trouble Shooting
- Fundamentals of Pattern Making



MACHINE SHOP

Trade Preparatory

Students completing the two-year program will learn to carry through to completion the construction and repair of metal parts, tools, and machines. They will have an understanding of blueprint reading and the interpretation of written specifications. They will learn to use all machinist's hand tools including scrapers, chisels, files, precision measuring and layout instruments. They will learn the fundamental setup and operation of all machine tools including lathes, milling machines, shapers, grinders, drill presses, and also specialized machines that have been developed from these machine tools. They will possess knowledge of shop mathematics, use of charts and tables, efficient planning of shop work, dimensions, and uses of standard bolts, screws, threads, and tapers. They will be familiar with the working properties of such metals as aluminum, brass, cast and wrought iron and various steels. They should be capable of shaping metal parts to precise dimensions within the close tolerances prescribed.



C — Class Hours L — Laboratory Hours Cr. — Credit Hours

First Quarter		C—L—Cr.
MS 201	Machine Shop Practice and Theory I	2—6—5
MS 121	Applied Mathematics I	3—0—3
MS 146	Blueprint Reading and Sketching I	2—0—2
MS 131	Applied Science I	2—0—2

9—6—12

Second Quarter		
MS 202	Machine Shop Practice and Theory II	2—6—5
MS 122	Applied Mathematics II	3—0—3
MS 147	Blueprint Reading and Sketching II	2—0—2
MS 132	Applied Science II	2—0—2

9—6—12

Third Quarter		
MS 203	Machine Shop Practice and Theory III	2—6—5
MS 123	Applied Mathematics III	3—0—3
MS 148	Blueprint Reading and Sketching III	2—0—2
MS 133	Applied Science III	2—0—2

9—6—12

Fourth Quarter		
MS 204	Machine Shop Practice and Theory IV	3—6—6
MS 124	Applied Mathematics IV	4—0—4
MS 149	Blueprint Reading and Sketching IV	2—0—2

9—6—12

Fifth Quarter		
MS 205	Machine Shop Practice and Theory V	3—6—6
MS 133	Structure of Metals	3—0—3
MS 145	Industrial Communications	3—0—3

9—6—12

Sixth Quarter		
MS 206	Machine Shop Practice and Theory VI	2—8—6
MS 139	Heat Treating Practice	3—0—3
MS 152	Human Relations	2—0—2

7—8—11

Seventh Quarter		
MS 207	Machine Shop Practice and Theory VII	2—8—6
MS 137	Oxyacetylene Welding	3—2—4

5—10—10

Eighth Quarter		
MS 208	Machine Shop Practice and Theory VIII	2—8—6
MS 116	Industrial Specifications	2—0—2
MS 151	Industrial Organization and Management	3—0—3

7—8—11

COURSE DESCRIPTIONS BY QUARTERS

First Quarter

MS 202	Machine Shop Practice and Theory I	2—6—5
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This course is an introduction to the machinist trade and the potential it holds for the craftsman. It deals primarily with the identification, care and use of basic hand tools, basic layout tools and materials. It introduces off-hand grinding procedures, drill press operations, and lathe processes.

MS 121 Applied Mathematics I**3—0—3**

This course lays the foundation for a better understanding of applied mathematics. This course is a review of simple mathematical situations dealing with fractions, decimals, conversion of one to the other, short methods and checks, percentage and applications, ratio and proportion, and powers and roots.

MS 146 Blueprint Reading and Sketching I**2—0—2**

A course in the interpretation and reading of blueprints used by industry. It will contain information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes.

MS 131 Applied Science I**2—0—2**

An introductory course in physics and its application. It covers systems of measurement, theory of matter, properties of solids, liquids, and gases. Experiments and laboratory exercises demonstrate the theory studied in classroom assignments.

Second Quarter**MS 202 Machine Shop Practice & Theory II****2—6—5**

This is an introduction to precision measuring instruments and layout procedures. Processes will consist of lathe, drill press, grinding (off-hand) and milling machines. These processes will be elementary processes with more emphasis on simple operating procedures.

MS 122 Applied Mathematics II**3—0—3**

This course is an introduction to algebra and algebraic computations. It will introduce the equation and solutions by addition, subtraction, multiplication, division. Special products and quotients, factoring, equations and applications, exponents, powers and roots will also be covered.

MS 147 Blueprint Reading & Sketching II**2—0—2**

This is a continuation of the previous course of blueprint reading with additional work in scaling, dimensions, holes, fillets, radii, title block information and specifications; and bill of materials, alterations and revision and procedures.

MS 132 Applied Science II**2—0—2**

This course covers the physical principles of force, energy, work and power; equilibrium and the laws of motion; the principles of machines, mechanical advantage, and transmission of power in practical applications.

Third Quarter**MS 203 Machine Shop Practice & Theory III****2—6—5**

This is a course in the precision layout tools and procedures, power sawing, advanced lathe, drill press, and milling machine operations. It also covers introductory units in surface grinding and shaper operations. Safety procedures are stressed at all times.

MS 123 Applied Mathematics III**3—0—3**

This is a course in the fundamental geometric concepts and construction of plane and solid figures, surface and volume measurement, and related problems; introduction to trigonometry of the right triangle. It introduces gear ratio, lead screw and indexing problems.

MS 148 Blueprint Reading & Sketching III**2—0—2**

Further practice in the interpretation of blueprints as they are used in industry, study of prints supplied by industries, making plans of operations, freehand sketching as a means of passing on ideas, and information and processes will be introduced.

MS 133 Applied Science III**2—0—2**

This is a course in the basic unit in the field of electricity and motors. It covers electron theory, magnetism, measurement and application of electricity; types, uses and care of motors for laboratories and machine shops.

Fourth Quarter

MS 204 Machine Shop Practice and Theory IV 3—6—6

This course is designed to give the student additional experience in the machine shop laboratory on the engine lathe, drill press, surface grinder, milling machine and shaper. Basic operations on the cylinder will be given. Projects will be completed encompassing all of the operations, tools and procedures thus far used and those to be stressed throughout the course.

MS 124 Applied Mathematics IV 4—0—4

This is a course in continued work in trigonometry with emphasis on applications to the machine shop. It covers use of trigonometric tables, with interpolation, giving the trainee sufficient knowledge to solve practical problems as they arise in the machine shop. Practical applications and problems will furnish the trainee with experience over the wide range of geometric propositions and trigonometric relations in actual shop problems, concluded by an introduction to compound angle problems.

MS 149 Blueprint Reading & Sketching IV 2—0—2

This course is a continuation of freehand sketching and advanced blueprint interpretation, to be used by the trainee in the machine shop laboratory courses.

Fifth Quarter

MS 205 Machine Shop Practice & Theory V 3—6—6

This course covers advanced work on the engine lathe, turning, boring, and threading machines, grinders, milling machine, and shaper. It is an introduction to basic indexing and terminology. Precision in layout of operations, and related information pertaining to these operations is taught.

MS 138 Structure of Metals 3—0—3

This is the course in the elementary and practical approach to metals, their structures, markings, classification, and uses. It includes interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

MS 145 Industrial Communications 3—0—3

This course is designed to develop the trainee's ability to communicate effectively with other individuals through the medium of good language usage in speaking, to think more clearly, and to reason more forcefully in work problems pertaining to his job.

Sixth Quarter

MS 206 Machine Shop Practice & Theory VI 2—8—6

This is a course in calculation, cutting and measuring of spur, helical, and worm gears, and wheels. The trainee will use precision protractors, comparators, etc. He will continue practice in all machine processes. Elementary turret lathe and tool and cutter grinder units will be given.

MS 139 Heat Treating Practice 3—0—3

Working knowledge of methods of treating ferrous and non-ferrous metals, the effects of hardening, tempering, and annealing upon the structure and physical properties of metals are studied. Trainees will be given the opportunity to acquaint themselves with the equipment and processes needed in heat treating.

MS 152 Human Relations 2—0—2

In this course instruction is given to promote the student's responsibility for good relations with his fellow workers or associates, and to develop his ability to deal with others efficiently in his chosen occupation.

Seventh Quarter

MS 207 Machine Shop Practice and Theory VII 2—8—6

This is a course in the development of class projects using previously learned

processes in planning, blueprint reading, machine operations, final assembly and inspection. It also covers additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc.

MS 137 Oxyacetylene Welding

3—2—4

This is a course in basic welding procedures and practice. The trainee will gain experience in the gas welding of small parts and tools. This course will present gas welding as it may be used by the machinist in the repair and manufacture of tools and equipment.

Eighth Quarter

MS 208 Machine Shop Practice & Theory VIII

2—8—6

This is a continuation of the class projects introduced in the previous quarter. Special procedures, processes and equipment, observing safety procedures faithfully and establishing good work habits and attitudes acceptable to the industry are covered.

MS 116 Industrial Specifications

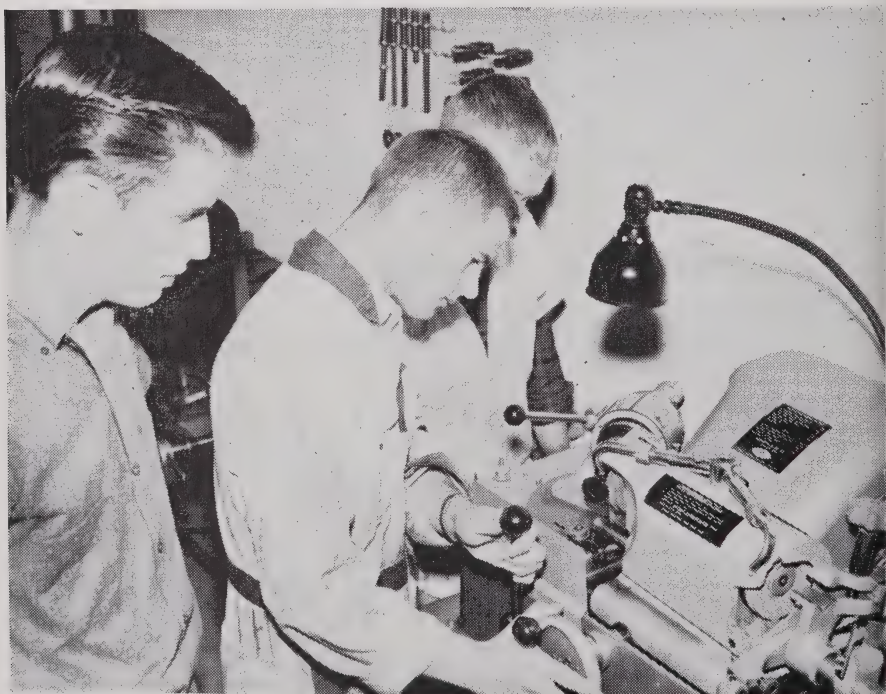
2—0—2

This is a course in the "what" and "why" of specifications. Organizing and studying machine tool and hand tool specifications, job sheets and procedure sheets are included. Catalogs, specification sheets, and manufacturer's handbooks serve as reference sources.

MS 151 Industrial Organization and Management

3—0—3

This course covers methods, techniques and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. It is an introduction to the competitive system, and the factors constituting product cost.



RADIO AND TELEVISION REPAIR

Trade Preparatory

This is a two year course designed to give classroom and laboratory instruction in basic radio and television servicing including basic radio servicing, basic television servicing and advanced television servicing. Related subjects will cover mathematics, drafting, blueprint reading, business management and human relations.

There is a sufficient amount of theory and practical experience to pre-types of test equipment used in trouble-shooting techniques, as well as in basic operations.

C — Class Hours		L — Laboratory Hours	Cr. — Credit Hours
First Quarter			C—L—Cr.
RTV 201	Basic Electricity		6—6—9
RTV 121	Basic Mathematics		3—0—3
			<hr/> 9—6 -12
Second Quarter			
RTV 202	Basic Electricity and Elements of Radio Servicing		9—6 -12
			<hr/> 9—6 -12
Third Quarter			
RTV 202	Elements of Radio Servicing		7—6 -10
RTV 145	Electrical Drafting		2—0—2
			<hr/> 9—6 -12

Fourth Quarter

RTV 204	Hi Fi & Inter Coms	9—6 -12
		9—6 -12

Fifth Quarter

RTV 205	Basic Television	6—6—9
RTV 145A	Electrical Drafting	3—0—3
		9—6 -12

Sixth Quarter

RTV 206	Basic Television	6—6—9
RTV 151	Business Management	3—0—3
		9—6 -12

Seventh Quarter

RTV 207	Advanced Television	6—6—9
RTV 152	Human Relations	3—0—3
		9—6 -12

Eighth Quarter

RTV 208	Circuit Design	9—6 -12
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COURSE DESCRIPTIONS BY QUARTERS

First Quarter

RTV 201 Basic Electricity

6—6—9

This course is designed to serve two primary functions. The first will be to introduce the student to the language of electricity and the second will be to lay a firm foundation of fundamentals before the student is subjected to specific radio and television problem areas. This course is designed with a practical approach that will be useful for technicians and servicemen. The laboratory work will be correlated with the classroom instruction. In the laboratory the student will be taught the proper use and care of hand tools. It will be the **basic duty** and **responsibility** of the instructor to teach and practice **SAFETY** at all times.

RTV 121 Basic Mathematics

3—0—3

This course is a unit of study designed to review the student in basic mathematics. This course will serve as a foundation on which to build the other related mathematics as the student progresses into advanced electricity. Basic mathematics will begin with a general review of addition, subtraction, multiplication, and division of whole numbers, decimals and fractions. It will progress to elementary algebra with emphasis placed on symbols, equations, and the concept and use of formulas.

Second Quarter

RTV 202 Basic Electricity & Elements of Radio Servicing

9—6 -12

This is a continuation of the basic electricity in the first quarter. In this course the student will study filters, electron tubes, and transistors. Much emphasis will be placed on electron tubes. Typical troubles will be described in each respective area. The necessary related mathematics will be taught as the subject theory demands it, thus combining the mathematics theory into one course of study.

Elements of radio servicing is restricted to the most widely used receiver—the superheterodyne. Basic information will be presented at all times and this information will be organized to develop procedures for application to specific radio troubles. The laboratory time will be correlated with basic electricity and elements of radio so as to enhance the student's ability to proficiently use the various instruments of measurement.

Third Quarter

RTV 203 Elements of Radio Servicing

7—6 -10

This is a continuation of the Elements of Radio Servicing from the second quarter. This course is of an advanced nature and will confront the student with advanced

problems in radio servicing. This course will include a study of portable receivers, automobile radio, and servicing the AM/FM receiver. This course will conclude with a study of the service bench for good service organization, as well as for appearance. The laboratory time will be correlated with the elements of radio servicing. The instructor will continue to observe and teach SAFETY. Emphasis will be placed on electronic symbols.

RTV 145 Electrical Drafting

2—0—2

This course will provide a fundamental understanding of drafting and then relate it to electricity. This course will begin with lettering and progress through one, two, and three view drawings to give the student an understanding of third angle projection. The student will be introduced to drawing instruments and other aids such as the electrical templates.

Fourth Quarter

RTV 204 Hi Fi and Inter Coms

9—6—12

The student will study basic, intermediate and advanced Hi Fi. Practical problems will be worked out, and the use of speakers, public address systems, film recording, and play back AM/FM radio and TV fidelity standards.

Fifth Quarter

RTV 205 Basic Television

6—6—9

This course is designed to follow the course in radio fundamentals. It consists of practical explanations of television principles, receiver circuits and troubleshooting. The necessary applied mathematics will be taught with this course as the theory demands it. First, the principles of television are explained, and from there this course is designed to go into the general requirements of television receivers. Materials in this course will be restricted to the essentials of black and white television receivers. The laboratory work is directly correlated with the classroom work. Emphasis is placed on the use and care of tools and instructions in the television repair shop.

RTV 145A Electrical Drafting

3—0—3

This is the advanced course of drafting procedure. This course will teach schematic drawing of circuits, circuit diagrams, graphs, and charts. The graphs will include layout of sine and cosine functions. This course will be concluded with some work in free-hand sketching.

Sixth Quarter

RTV 206 Basic Television

6—6—9

This is a continuation of the basic television course in the preceding quarter. It will be continuing the study of television principles, television receivers, and problem areas. Specific units will include practical design of video amplifiers, antennas and transmission lines, and receiving servicing. Laboratory work will be correlated with classroom work. This course is designed specifically for students who wish to establish their own radio and television business.

RTV 151 Business Management

3—0—3

This course will be a study of basic economic factors involved in operating a Radio and T. V. repair shop. Such matters as budgeting, business competition, advertising, overhead costs, service charges, salary scales, and profit and loss will be studied.

Seventh Quarter

RTV 207 Advanced Television

6—6—9

This course is designed to present the student with advanced work in the elements of television. New servicing techniques will be introduced. A study will be made of the printed circuit, servicing receivers that use them, and problems arising from tube filaments with varying thermal characteristics. The course will be concluded with the study of color television. The laboratory work is directly related to the classroom work. The student will be given a chance to think individually concerning the solution to specific problems. Individual experiments will be encouraged.

RTV 152 Human Relations**3—0—3**

A study of principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions, and learning are considered with particular reference to their application to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts as they relate to the employee and his work satisfaction. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

Eighth Quarter**RTV 208 Circuit Design****9—6 -12**

(Course being revised)

SEWING (Furniture Fabric)

In this course the student has an opportunity to learn to operate the sewing machine, to sew material in order to have proper fitting of patterns and to match fabrics. The purpose is to learn the fundamentals of sewing operations so that speed and production may be attained. The length of the course is 320 hours.

The student will learn the following:

1. Basic knowledge of the sewing machine
 - a. How to thread a machine
 - b. How and when to change stitches
 - c. How to change needles
 - d. How and when to adjust tension
2. Understanding pieces to be sewn
 - a. Understanding cutters marks
 - b. Where and why to sew pulls
 - c. Where and why to sew welts
 - d. How to sew welts
 - e. How to French seam (top stitch)
 - f. How to match stripes
 - g. Where to match stripes
3. Sewing the loose cushion
 - a. Learning the importance of exact seaming
 - b. How to apply boxing to face of cushion to sew
 - c. How to join boxing
 - d. How to match stripes on boxing and face
 - e. How to finish cushion
4. Sewing skirts—Flounces
 - a. Learning to sew box-pleat skirt
 - b. Learning to line box-pleat skirt
 - c. Learning to sew flounces



UPHOLSTERY

This course runs 520 hours and is set up to give the student an opportunity to learn the skills involved in upholstery. The course covers various styles and types of furniture and gives practical experience in the construction, springing up and period of history of the frame to be upholstered.

The student will learn to do the following:

1. Spit tacks — hammer technique
2. Arrange and secure filler and padding
 - a. Sewing large stitches across surface of fabric covering of springs and working filler under stitches to form holding base.
 - b. Spreading more filler over surface and placing cover filler, sewing it to bottom fabric.
 - c. Placing additional filler on top of cover and covering padded sections with-unbleached muslin, tacking muslin to frame.
 - d. Arranging layer of cotton wadding over muslin cover for smoother finish.
3. Cover padded frame with upholstery fabric
 - a. Selecting previously cut fabric, partially stitched, and aligning and smoothing it in place over cotton wadding.
 - b. Tacking cover to form in key spots to hold it temporarily.
 - c. Sewing sections of cover which have been left unstitched with invisible lockstitches.
 - d. Strengthening and tacking edges of cover tightly and evenly to frame.
 - e. Untacking covering in places and inserting regulator to smooth out lumpy padding, then permanently tacking.
 - f. Trimming covering around legs and uprights to make a neat fit.

- g. Tacking or gluing gimp over seams to cover rough edges and tack heads.
 - h. Sewing or tacking on ornamental braid, buttons, or tassels.
4. Making and tying buttons
 5. History of furniture, periods
 6. Tools and equipment
 7. Springing up
 8. Body Work
 9. Stuffing
 10. Covers
 11. Tufting and buttoning



FIREMANSHIP TRAINING

The major objective of the Firemanship Training Program is to provide instruction, geared to local needs, which will increase the skill and knowledge of the fire fighter in firematic subjects. Instruction is given helping the firemen keep abreast of technological and economic changes of the fire profession and assist him in qualifying for advancement in the fire protection field. The curriculum includes technical and manipulative instruction as well as safety and supervisory development. The program is composed of two phases. These phases along with major points of interest are as follows.

FIRE SERVICE METHODS AND TECHNIQUES

Basic Unit 1 — 15 hours.

- a. Five major causes of failure
- b. Protective clothing
- c. Breathing Equipment

Basic Unit 2 — 15 hours.

- a. Forcible Entry
- b. Ventilation
- c. Salvage and Overhaul
- d. Handling Ladders

Basic Unit 3 — 15 hours.

- a. Structural Fire Fighting Procedures
- b. Chemistry of Fire
- c. Portable Fire Extinguishers
- d. Fire Hose Practices

PUMP OPERATIONS

Basic Unit 4 — 15 hours.

- a. Mechanical Principles of Fire Pump
- b. Fire Stream Practices

Fire Service Methods and Techniques — 368 hours.

1. Forcible Entry, Rope and Portable Extinguisher Practice
2. Ladder Practices
3. Hose Practices
4. Salvage and Overhaul Practices
5. Fire Stream Practices
6. Fire Apparatus Practices
7. Ventilation Practices
8. Rescue Practices
9. First Aid Practices
10. Fire Inspection Practices

Fire Service Officer Training — 50 hours.

1. The Fire Department Officer
 - a. Organization and the Fire Officer
 - b. Non-Fire Fighting Activities of the Fire Officer
 - c. Fire Fighting Activities of the Fire Officer
2. Fire Service Instructor Training
3. Fire Fighting Procedures

SUPERVISORY DEVELOPMENT TRAINING PROGRAM

The Center conducts an evening school program to meet the educational requirements of men and women who desire to prepare themselves to fill the growing need of industry for personnel with technical and supervisory training.

Information concerning the admission requirements, cost, diploma requirements and certificate requirements may be obtained by visiting or calling the Center during school hours.

The courses are offered when as many as 10 to 12 people request the same course. A diploma is offered when 8 required and 8 elective courses are taken from the list below. An advanced diploma is given for 8 additional required subjects and 8 additional elective subjects. The courses by category are listed below:

Category I—Basic Human Behavior and Behavioral Sciences

- | | | |
|----------|----|-------------------------------------|
| Course # | 1. | Art of Motivating People |
| | 2. | Motivation and Resistance to Change |
| | 3. | Problems of Handling People |
| | 4. | Economics Training |
| | 5. | Applied Psychology |

Category II—Organization and Management

- | | | |
|----------|-----|---|
| Course # | 6. | Principles of Organization and Management |
| | 7. | Problems in Business Management I |
| | 8. | Problems in Business Management II |
| | 9. | Effective Job Organization |
| | 10. | J-i-f-f-i-e |
| | 11. | Training Courses in Cost Accounting |
| | 12. | Cost Control Accounting |
| | 13. | Machinery Manufacturing Cost Control |

Category III—Supervision

- | | | |
|----------|-----|---|
| Course # | 14. | Oral Communication |
| | 15. | Handling Barriers in Communications |
| | 16. | Communications in Business and Industry |
| | 17. | Labor Laws for Supervisors |
| | 18. | Departmental Personnel Procedures |
| | 19. | Foremanship Training |

Category IV—Work

- | | | |
|----------|-----|-------------------------------------|
| Course # | 20. | Job Analysis Training |
| | 21. | Personnel Management—Job Analysis |
| | 22. | Personnel Management—Job Evaluation |
| | 23. | Production Scheduling and Control |

- 24. Wage Incentives
- 25. Quality Control
- 26. Job Methods Training
- 27. Time and Motion
- 28. Work Simplification
- 29. Paperwork Simplification

Category V—Employee Utilization

- Course # 30. Problem Solving
- 31. Program Development
- 32. Waste Reduction
- 33. Job Relations Training
- 34. A Suggestion System
- 35. Conference Leadership Training

Category VI—Employee Development

- Course # 36. Techniques that Produce Teamwork
- 37. Material Handling
- 38. Job Instruction Training
- 39. Using Job Instruction Training

Category VII—Academic Development

- Course # 40. Techniques of Clear Writing
- 41. Business Letter Writing
- 42. Technical Report Writing
- 43. Memo and Report Writing
- 44. Vocabulary for Supervisors
- 45. Slide Rule I
- 46. Slide Rule II
- 47. Industrial Speed Reading
- 48. Advanced Speed Reading
- 49. Effective Speaking for Supervisors
- 50. Extemporaneous Speaking for Industrial Supervisors
- 51. Creative Thinking I
- 52. Creative Thinking II
- 53. Creative Thinking III

Category VIII—Work Safety, First Aid, Health Education, Housekeeping and Maintenance

- Course # 54. Industrial Safety I
- 55. Industrial Safety II
- 56. Industrial Safety III
- 57. Industrial Safety IV
- 58. Industrial Safety V
- 59. Industrial Safety VI
- 60. Accident Prevention for Industrial Supervisors
- 61. First Aid Instruction
- 62. Plant Maintenance and Housekeeping

EVENING SCHOOL PROGRAM

The Center conducts an Evening School Program to meet the educational requirements of men and women who desire to update or upgrade themselves to fill the growing need of industry for such people.

In order to be eligible to take one or more of the courses listed below, a person must be employed in the occupational field in which the course is given. These courses are available to industrial organizations, apprentice groups and to individuals when there is sufficient number of students to begin a class. A class may be started if there are as many as twelve interested people who desire to take a particular course.

The cost and other requirements are the same as shown in the general information section of this catalogue.

Additional information concerning this Program may be obtained from the Director, the Associate Director, or Assistant Director, by visiting or calling the Catawba County Industrial Education Center. A partial list of courses is below:

- Basic Electricity
- Blueprint Reading
- Sheet Metal Related Theory
- Radio and TV Related Theory
- Color Television Related Theory
- Machinist
- Engine Overhaul
- Brakes
- Transmissions and Clutches
- Electrical System (Auto Mechanics)
- Front end alignment
- Bench Work and Layout — The Machine Shop
- Drill
- Lathe
- Milling Machine
- Grinder
- Report Writing
- Loom Fixing
- Knitter Fixing
- Electrical Code
- Slide Rule
- Tool and Die Theory
- Related Mathematics

FACULTY:

Air Conditioning & Refrigeration	Homer C. Schmitt
Automotive Mechanics	Joe Amos, Department Head Henry Mackie, Jr.
Bricklaying	Clarence Moser
Drafting & Design Technology	Dean Hokanson, Department Head Philippe Gilissen William Coley
Electronics Technology	Clay Groves, Department Head
Knitting Machine Fixing	William Hollar, Department Head
Machine Shop	John Poropatic, Department Head James Currie
Mathematics	Robert Williams
Physics	James Brannock
Technical Writing & Related Subjects	James Britt
Upholstery — Cutting & Sewing	Odes Gurley, Department Head Mrs. Pauline Coble Thomas Winn

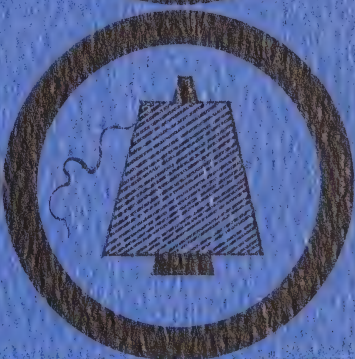
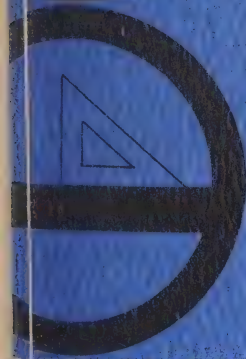
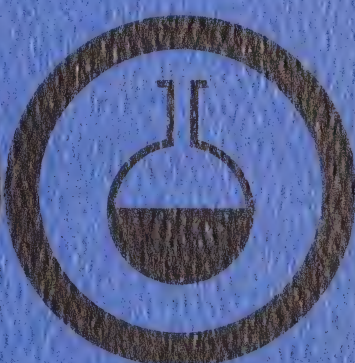
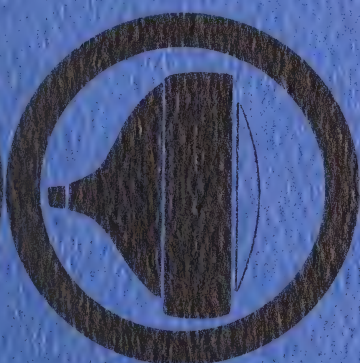
SUPPLEMENTAL FACULTY:

William Burton	Blueprint Reading
Garlan Eaker	Blueprint Reading
Mrs. Emilie Huffman	Nutrition
Edwin Isenhour	Mathematics & Supervisory
James Nowell	Machine Trades
Grady Watts	Automotive
George Kimberlin	Firemanship
Alvin Lowdermilk	Electrical
Claude Hefner	Electrical
George Teague	Knitter Fixing
Curtis Milam	Knitter Fixing
Dan Jones	Agricultural Technology
V. A. H. Randall	Agricultural Technology
Paul Moretz	Apprenticeship
Jake Schoonderwoerd	Supervisory
John Hefner	Supervisory
Robert Holland	Supervisory
Charles Cagle	Supervisory
Robert Shores	Supervisory
Martin Burrows	Supervisory
Hugh Lyerly	Supervisory
Clyde Gower	Supervisory
Art Kalenian	Supervisory

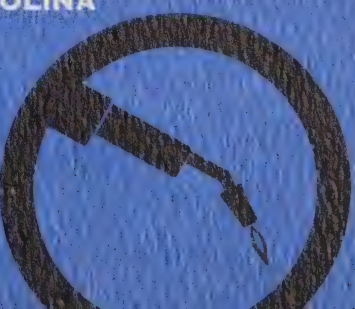
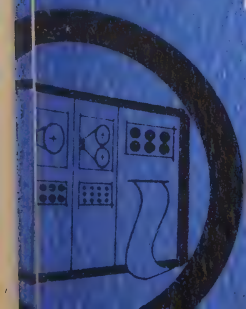
OFFICE STAFF:

Mrs. Judith Rogers	Secretary-Bookkeeper
Mrs. Carolyn Fulbright	Secretary
Miss Reita Kay Donkle	Secretary
George Brown	Custodian of Building and Equipment
Tommy Ramseur	Custodian

CATALOG
1964-1965



CATAWBA COUNTY INDUSTRIAL EDUCATION CENTER
NEWTON, NORTH CAROLINA



CATAWBA COUNTY INDUSTRIAL EDUCATION CENTER

HWY. 64-70-321

Midway—Newton and Hickory

**CATALOGUE OF COURSES
DAY AND EVENING SCHOOL**

VOLUME IV

1964-1965

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ACADEMIC CALENDAR

1964-65

FALL QUARTER

Registration	September 2-3
Day Classes Begin	September 8
Night Classes Begin	September 8
Last Day For Registration	September 14
End of Fall Quarter	November 20

WINTER QUARTER

Registration	November 23-24
Thanksgiving Holidays	November 26-27
Day Classes Begin	November 30
Night Classes Begin	November 30
Christmas Holidays	December 24
Resume Classes	January 2
End of Winter Quarter	February 24

SPRING QUARTER

Registration	February 25-26
Day Classes Begin	March 8
Night Classes Begin	March 8
Easter Holiday (to be announced)	
End of Spring Quarter	May 21

SUMMER QUARTER

Registration	May 27-28
Day Classes Begin	May 31
Night Classes Begin	May 31
Independence Holidays	July 5-9
End of Summer Quarter	August 20

ADMINISTRATION

BOARD OF TRUSTEES

Harry M. Arndt, Chairman

Adrian Shuford, Vice-Chairman

Ralph Bowman

Charles Groves

Cyril Long Mebane

Walker Geitner

Frank M. Little

Hubert Gilbert

ADMINISTRATIVE STAFF

Robert E. Paap.....Director

Marcus B. Simpson.....Associate Director

Bruce B. Bishop.....Assistant Director

William D. Killian.....Evening Supervisor

Thomas W. Jameson.....Distributive Education Specialist

Carolyn Fulbright.....Secretary to Director

Elizabeth Robinson.....Bookkeeper

Reita Lackey.....Secretary

FOREWORD

Catawba County Industrial Education Center is a state-county supported institution which accepts both men and women for enrollment. The I.E.C. seeks to make available to each student that type of education which will best provide for professional competence in the field of his major interest. Educational areas within the province of the I.E.C. are: Technical and Technical Specialization fields, occupational training in Trade areas, Health Service areas, Adult Education programs and special extension programs.

The complex society in which we live today is remarkably sensitive to the rapid advances in science, technology, and occupational training. In such a world, professional competence is of prime importance. If students are to take their places as fully contributing members of society, technical knowledge alone is not sufficient. They must also develop an awareness and understanding of the historical and cultural heritage of the nation and present-day problems in realms of sociology, economics, business, and government.

Catawba County Industrial Education Center recognized this concept as one of the basic aims of education by accepting responsibility for preparing young men and women to meet successfully the challenge of our changing society. To this aim, each program provides the opportunity to obtain a sound education and a proper basis for specialization.

Robert E. Paap, Director

AREAS OF STUDY

TECHNICAL DIVISION

Courses offered in the Technical Division are designed to meet the increasing demand by industry for high level industrial skills. The technician is a person whose chief interests and activities lie in the direction of testing, developing, and applying the operation of engineering and scientific processes. He will be exposed in such activities as drafting, design, installation and operation of equipment, estimating, and sales. The technical curricula requires two years for completion. The technical curricula are similar to professional engineering curricula but briefer and more technical in content.

Students choosing to enter a technical course must meet educational and aptitude requirements applicable to the individual course of their choosing. Students must have a well founded educational background in mathematics and science and possess adult maturity with a general aptitude for this advanced type of training.

Students who successfully complete courses in this division will be prepared to offer prospective employers the skills and education necessary to work as an industrial technician. In order for the applicant to get full benefit of technical courses, it is recommended that he be enrolled for the full-time program.

TRADE DIVISION

In an ever changing world of engineering and technologies, one must not lose sight of the ever growing need for skilled craftsmen. The Industrial Education Center offers a series of training courses in the trade division with emphasis on manipulative and mental skills applicable to a particular course for which a student is enrolled. Trade courses require one full year of participation for students on a full-time basis. Applicants for the trade division will therefore be urged to enroll for a full-time program.

EXTENDED DAY DIVISION

An Extended Day Division provides an opportunity for working men and women to pursue a technical or trade course of their choosing in the evening.

Included in this division are short term courses designed to meet specific needs in the areas of upgrading and updating of current

occupations. Also included in this division are management and supervisory level courses designed to meet the needs of those individuals who desire to advance in specific fields of management. Special classes, both day and night, may be offered to accommodate such students.

ADMINISTRATIVE PROCEDURES

GENERAL REQUIREMENTS

The Industrial Education Center is a co-educational institution and any North Carolina citizen may enroll in a course provided he meets educational requirements. Requirements will vary depending upon the division in which an applicant seeks training and the particular course desired.

All applicants must be sixteen years of age or older and must possess certain attitudes, aptitudes, and interests. No applicant may enroll in more than one curriculum at any given time.

An applicant should be in reasonably good health with no impairments or physical defects that would effect his ability to achieve in a particular field of work. Applicants in certain instances may be required to furnish evidence of satisfactory health.

Applicants desiring to pursue a course in the technical division must be high school graduates or equivalent. Technical level students must have completed two years of high school mathematics, preferably one year of algebra and one year of geometry. Physics and chemistry are also desirable prerequisites for students pursuing a course in the technical division.

ADMISSION PROCEDURE

Persons wishing to pursue courses at the Industrial Education Center must secure an application for admission. Application forms may be obtained in person or by writing or calling the Industrial Education Center located midway between Hickory and Newton on Highway 64-70-321. Telephone Numbers: Hickory—327-9124, Newton—464-4106.

Application for a given course may be made at any time preceding the enrollment date of courses. It is strongly recommended that this be done at least thirty days prior to the beginning of each quarter. Such time is required for the necessary testing, counseling and the proper evaluation of results.

All applicants desiring to pursue a technical or trade course will be required to take the General Aptitude Test Battery administered by the Employment Security Commission. Under special conditions, equivalent examinations may be given by the Industrial Education Center at their discretion.

Applicants will be required to complete the following steps:

1. Make application
2. At time of application, deposit a \$2.00 registration fee
3. Submit a transcript of high school records
4. Complete GATB tests
5. Arrange for an interview with Industrial Education Center Director of Student Services

Upon completion of the preceding steps, each application will be evaluated. Notification of acceptance will be made within two weeks after the above requirements have been completed. No application will be considered complete until all required information has been submitted to the Director of Student Services.

TRANSFER STUDENTS

The Catawba County Industrial Education Center will accept work and give credit of work completed in other Industrial Education Centers, Technical Institutes, and Colleges. Transfer students will be required to make formal application and submit transcripts of previous work which will be evaluated. Final acceptance of transfer credit will be at the discretion of the Director.

FEES

Registration Fee\$ 2.00

Tuition Fee:

Full-time students (per quarter)..... 30.00

Part-time students (per credit hour)..... 2.00

In addition to the above charges, students must buy the textbooks prescribed in various areas.

REFUNDS

Under no circumstances will the \$2.00 Registration Fee be refunded. Tuition refunds for full-time students shall not be made unless the student is compelled to withdraw for unavoidable reasons. In such cases, \$20.00 may be refunded (full-time students) if the student withdraws within 20 days after the beginning of the term. No refund may be given after 20 days.

WITHDRAWALS

Students who must withdraw passing, because of illness or personal hardships, may re-enter the course as a beginning student provided that such re-entry is taken upon the next immediate offering.

Students may be dismissed from school for failure to maintain passing grades and for infraction of rules and regulations that apply to student conduct. Any student who has been dismissed may re-enter after an interval of one year on a probationary basis. Students desiring to withdraw in good standing should first notify their major instructor, and secondly make formal withdrawal with the Director of Student Services.

GRADING SYSTEM

Grades will be issued to all students at the end of each quarter. Students enrolled in either the technical division or the trade division will be graded by the following numerical system:

95-100	Excellent
86-92	Above Average
78-85	Average
70-77	Passing
Below 70	Failing
WP	Withdrawn Passing
WF	Withdrawn Failing
I	Incomplete

ATTENDANCE

All students will be expected to attend prescribed classes according to their prearranged schedule. Only excused absences will be permitted. Unexcused absences will be marked as "0" for daily work. Three consecutive absences will subject a student to dismissal. An accumulation of unexcused absences will also subject a student to dismissal.

STUDENT CONDUCT

Students will be expected to conduct themselves at all times as mature adults. Students who do not respect the rights and privileges of other students and fail to demonstrate a high regard for school facilities, property, and personal property of others will be subjected to dismissal.

STUDENT SERVICES

COUNSELING AND TESTING

The Center conducts a service of counseling and guidance for the benefit of students enrolled at the Center and for applicants desiring professional assistance in the selection of a program of learning. Students who are having difficulties with grades or personal problems should seek counsel with the Director of Student Services.

The Director of Student Services is specially trained to assist in personal counseling, study habits, and interpreting rules and regulations pertaining to the Center. He will be your friend while attending the Center.

LIBRARY

It has been said that an institution is only as strong as its library. It is through this belief that the Center has maintained a vigilance and unflinching effort in the continual development of its library facilities. A technical library is maintained by the Catawba County Industrial Education Center for use by faculty and students. The library contains publications on engineering, technical, and trade levels. The library service is open to all students participating in the various divisions of the Center.

PLACEMENT SERVICE

The Center provides a placement service by working with the Employment Security Commission which will assist the students and alumni in seeking employment. Industries that conduct their own recruitment program will be granted permission to interview students upon request.

STUDENT HOUSING

The Center does not maintain living quarters for students from outlying areas, but it will be the policy of the school to assist students in acquiring adequate rooming facilities when requested.

STUDENT LOUNGE

A refreshment lounge equipped with a variety of vending machines is provided for the convenience of students and faculty.

GRADUATION REQUIREMENTS

DIPLOMAS

Students completing a prescribed course in either the technical or trade divisions will be granted a state diploma upon the successful completion of all prescribed classes within a course. Successful completion means all grades must be passing or better. Students who fail individual courses will be required to make up such deficiencies before a diploma will be granted.

CERTIFICATES

Certificates of completion will be granted for all students successfully completing short term classes.

CATAWBA COUNTY INDUSTRIAL EDUCATION CENTER

TECHNICAL DIVISION PROGRAMS OF STUDY

Agricultural Business Technology	—6 qtrs.
Air-Conditioning & Refrigeration Technology	—6 qtrs.
Distribution & Marketing Technology	—6 qtrs.
Drafting & Design Technology	—6 qtrs.
Electronics Technology	—6 qtrs.

AGRICULTURAL TECHNOLOGY—BUSINESS

INTRODUCTION

Purpose of Curriculum

Rapid technological changes in farming and related agricultural businesses have given rise to the need for more technically trained people. A variety of agricultural businesses and industries employ persons to assist in marketing, processing, and distributing of farm products and providing services to the farmer. Many responsible positions in agricultural businesses and industries require technical training not available in high schools or in four-year colleges.

The Agricultural Technology-Business Curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business. It combines knowledge of agriculture with business training to prepare the graduate for one of the many varied employment opportunities in agricultural business. The specific objectives of the Agricultural Business Curriculum are to develop the following student competencies:

1. Understanding of the principles of organization and management in agricultural businesses, industries and farm operations.
2. Understanding of the basic principles of our economic system, marketing, credit, price concepts and governmental policies and programs relating to agriculture.
3. Understandings and skill in effective communication for agricultural business.

CURRICULUM BY QUARTERS

COURSE TITLE

FIRST QUARTER

			Course Hours Per Week		Quarter Hours Credit
			Class	Lab.	
BUS	311	Business Mathematics	3	0	3
ENG	301	Reading Improvement	2	0	2
AG	370	Animal Science	5	2	6
AG	310	Introduction to Agricultural Economics	5	2	6
			15	4	17

SECOND QUARTER

BUS	320	Accounting	5	2	6
ENG	302	English	3	0	3
AG	312	Agricultural Marketing	5	2	6
AG	420	Plant Science	5	2	6
			18	6	21

THIRD QUARTER

BUS	321	Accounting	5	2	6
AG	314	Farm Business Management	5	4	7
ENG	303	Technical Writing	3	0	3
AG	492	Fertilizers and Lime	3	2	4
			<hr/> 16	<hr/> 8	<hr/> 20

FOURTH QUARTER

AG	316	Agricultural Finance	5	2	6
BUS	317	Sales Development	3	2	4
BUS	326	Business Organization and Operation	3	0	3
ENG	304	Communicative Skills: Speech	2	0	2
		Agriculture or Business: Elective	—	—	5
			<hr/> 13	<hr/> 4	<hr/> 20

FIFTH QUARTER

AG	306	Farm Chemicals	5	2	6
BUS	318	Business Law	5	0	5
AG	336	Farm Electrification	3	2	4
BUS	310	Written Sales Communications	3	2	4
			<hr/> 16	<hr/> 6	<hr/> 19

SIXTH QUARTER

SIXTH QUARTER						
SOC	301	Human Relations	2	0	2	
AG	326	Agricultural Program and Agencies	3	2	4	
BUS	335	Business Management	3	0	3	
BUS	309	Business Machines	0	4	2	
AG	502	Agricultural Business Practicum	198 MINIMUM HOURS			6
		Agriculture or Business: Elective	—	—	5	
			<hr/> 8	<hr/> 6	<hr/> 22	

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE		Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER		Class	Lab.	

BUS 311 Business Mathematics

3 0 3

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, insurance, taxes and other pertinent uses of mathematics in the field of business.

Prerequisite: None.

ENG 301 Communicative Skills: Reading Improvement

2 0 2

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

AG 370 Animal Science	5	2	6
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Basic principles of zoology and genetics as related to farm animals. The scientific study of all commercially important classes of farm animals.

Prerequisite: None.

AG 310 Introduction to Agricultural Economics	5	2	6
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An introduction to economics, the functions of the economic system and agriculture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main sources of change which affect agricultural firms.

Prerequisite: None.

SECOND QUARTER

BUS 320 Accounting	5	2	6
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Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises to include practical application of the principles learned.

Prerequisite: None.

ENG 302 Communicative Skills: English	3	0	3
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Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

AG 312 Agricultural Marketing	5	2	6
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An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco.

Prerequisite: AG 310.

AG 420 Plant Science	5	2	6
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An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions, and development of seed bearing plants with application to certain commercially important plants in North Carolina.

Prerequisite: None.

THIRD QUARTER

BUS 321 Accounting	5	2	6
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Partnership and corporation accounting including a study of payrolls, Federal and State taxes. Emphasis is placed on the recording, summarizing and interpreting data

for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems.
Prerequisite: BUS 320.

AG 314 Farm Business Management 5 4 7

A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most net revenue. Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager.

Prerequisite: AG 310.

ENG 303 Communicative Skills: Technical Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

Prerequisite: None.

AG 492 Fertilizers and Lime 3 2 4

A review of the source, function, and use of the major and minor plant food elements; commercial fertilizer ingredients; soil acidity, liming materials; application of fertilizer and liming materials.

Prerequisite: None.

FOURTH QUARTER

AG 316 Agricultural Finance 5 2 6

Analysis of the capital structure of modern commercial agriculture with emphasis on the sources of credit. Application of management principles in choosing the amount and kind of credit a farmer should use. A review of lending institutions, repayment schedules, and credit instruments. Practice in the procedure of evaluating farm resources with attention to information needed for resource valuation, appraisal farms and procedures, discounting and depreciation. A review of the historical development of credit programs and institutions in the United States.

Prerequisite: AG 310.

BUS 317 Sales Development 3 2 4

A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required.

Prerequisite: None.

BUS 326 Business Organization and Operation 3 0 3

A study of the legal structures of the various types of business organizations, methods of financing, internal organization and management.

Prerequisite: None.

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

FIFTH QUARTER

AG 306 Farm Chemicals 5 2 6

A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control.

Prerequisite: None.

BUS 318 Business Law 5 0 5

Basic business laws including the law of contracts, negotiable instruments, agency, partnership, corporation, deeds of conveyance, etc., will be covered. A primary objective of the course is to enable the student to know when to consult a professional lawyer.

Prerequisite: None.

AG 336 Farm Electrification 3 2 4

A study of the basic principles and systems used in farm electrification. Application to agricultural production. Emphasis is on equipment for controlling the utilization of electricity.

Prerequisite: None.

BUS 310 Written Sales Communications 3 2 4

Develops skills in techniques in writing business communications. Emphasis is placed on writing action—getting sales letters and prospectuses. Business reports, summaries of business conferences, spot announcements for radio and television as well as letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry are also included in this course.

Prerequisite: ENG 302.

SIXTH QUARTER

SOC 301 Human Relations 2 0 2

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations; personal and group dynamics and self-adjustment.

Prerequisite: None.

AG 326 Agricultural Programs and Agencies 3 2 4

A review of the public agriculture programs and agencies that provide services for agricultural producers. The objectives, organization, functions and services of these organizations.

Prerequisite: AG 310.

BUS 335 Business Management**3 0 3**

Principles of business management including overview of major functions of management such as planning, staffing, controlling, directing, and financing. Clarification of the decision-making function versus the operating function. Role of management in business—qualifications and requirement.

Prerequisite: None.

BUS 309 Business Machines**0 4 2**

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of 10-key adding machine, full-keyboard adding machine, calculator, posting and accounting machines, card punch, and card verifier.

Prerequisite: None.

AG 502 Agricultural Business Practicum**198 MINIMUM HOURS 6**

Supervised learning experiences—learning experiences related to the instruction that requires development beyond normal school hours and facilities—organized cooperatively between the school administration and selected agricultural industries or businesses. The student will gain practical experience under the supervision of agricultural businessmen and school personnel in an agricultural enterprise. Oral and written reports, field problems, and group discussions will be included.

Prerequisite: None.

AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

INTRODUCTION

In recent years the use of air conditioning and refrigeration equipment has increased tremendously. Practically all new building construction for business and commercial use have "year-round" air conditioning systems. Many homes now have air conditioning and the trend is toward greater use of "year-round" systems for cooling and heating. Food stores are requiring greater use of refrigeration systems for storage and display of products. With this great upswing in the use of air conditioning and refrigeration equipment a greater demand is made on the supply of trained personnel to plan and supervise installations, and to supervise the operation and maintenance of heating, air conditioning and refrigeration equipment.

This curriculum is designed to meet the basic requirements of a program to provide capable technicians in the industry. The principal objective has been to outline the required technical information and theoretical knowledge while maintaining a good balance of certain manipulative skills to enable the technician to function efficiently with the wide range of engineers, designers, skilled craftsmen, salesmen, and others in the field. Considerable emphasis is placed on self-development in the express hope that an individual trained hereby will continue to study and grow as the industry advances.

CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
AHR	311	Fundamentals of Refrigeration I	5	2	6
MA	301	Technical Mathematics	5	0	5
ENG	301	Reading Improvement	2	0	2
DD	307	General Drafting	2	3*	3
PHY	301	Physics: Properties of Matter	3	2	4
			17	7	20
SECOND QUARTER					
AHR	312	Fundamentals of Refrigeration II	3	4	5
MA	302	Technical Mathematics	5	0	5
ENG	302	English	3	0	3
DD	308	General Drafting	2	3*	3
PHY	302	Physics: Work, Energy, Power	3	2	4
			16	9	20

THIRD QUARTER

AHR	313	Commercial Refrigeration Systems Design	5	4	7
MA	303	Technical Mathematics	5	0	5
ENG	303	Technical Writing	3	0	3
PHY	303	Physics: Electricity	3	2	4
			<u>16</u>	<u>6</u>	<u>19</u>

FOURTH QUARTER

AHR	314	Heating Principles	3	4	5
AHR	315	Fuels and Burners	3	2	4
DD	310	Descriptive Geometry	2	4	4
ENG	304	Speech	2	0	2
SOC	302	Economics	3	0	3
PHY	311	Fluid Mechanics	3	0	3
			<u>16</u>	<u>10</u>	<u>21</u>

FIFTH QUARTER

AHR	318	Air Conditioning Principles	5	6	8
AHR	316	Circuits and Controls	4	2	5
DD	316	Air Conditioning Systems Drawings	2	3*	3
ISc	301	Industrial Organization and Management	3	0	3
			<u>14</u>	<u>11</u>	<u>19</u>

SIXTH QUARTER

AHR	319	Air Conditioning Systems Design	5	6	8
AHR	317	Estimating and Contracts	3	4	5
SOC	301	Human Relations	2	0	2
AHR	320	Seminar and Research	1	4	3
			<u>11</u>	<u>14</u>	<u>18</u>

* "Manipulative laboratory" involves development of skills and job proficiency. Credit of one quarter hour for each three hours of laboratory.

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE		Course Hours Per Week	Hours Lab.	Quarter Hours Credit
FIRST QUARTER				
AHR 311	Fundamentals of Refrigeration I	5	2	6
Terminology, laws of refrigeration, absolute pressure and absolute temperature, energy conversion units; specific heat, latent heat, and sensible heat; measurement of heat in quantity and intensity; ton of refrigeration, pressure temperature relationships; transfer of heat by conduction, convection and radiation; elementary refrigeration, refrigeration cycle and refrigerant controls, tools, materials, methods applicable to air conditioning and refrigeration.				
Prerequisite: None.				
MA 301	Technical Mathematics	5	0	5
The real number system is developed as an extension of natural numbers, integers, and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative.				
Prerequisite: None.				

ENG 301 Communicative Skills: Reading Improvement 2 0 2

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

DD 307 General Drafting 2 3* 3

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

Prerequisite: None.

PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

Prerequisite: None.

SECOND QUARTER

AHR Fundamentals of Refrigeration II 3 4 5

Refrigerants and their applications in commercial refrigeration; system components, accessories, installation procedures and techniques; diagnosing service problems; mechanical difficulties; methods of defrosting; and making sketches of designs for high, medium and low temperature installation. Symbols for refrigeration and piping equipment will be used in making sketches.

Prerequisites: AHR 311, PHY 301.

MA 302 Technical Mathematics 5 0 5

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered.

Prerequisite: MA 301.

ENG 302 Communicative Skills: English 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

DD 308 General Drafting 2 3* 3

The student continues the study of orthographic projection with applications to orthographic instrument drawing. Dimensioning procedures and practices are emphasized and the student is introduced to the "working drawing." Methods of describing complex objects with auxiliary views and/or sections and conventions are taught. Prerequisite: DD 307.

PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisites: MA 301, PHY 301.

THIRD QUARTER

AHR 313 Commercial Refrigeration Systems Design 5 4 7

Procedures of load calculating used in commercial refrigeration. Various types of installations are studied with emphasis on the product to be cooled, the desired temperatures to be maintained, and humidity conditions. Problems involving system balance and component capacity. Use of heat load charts, pipe sizing tables, manufacturers data, and specification sheets. Prerequisite: AHR 312.

MA 303 Technical Mathematics 5 0 5

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate systems and their applications constitute other areas of study. Prerequisite: MS 302.

ENG 303 Communicative Skills: Technical Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

PHY 303 Physics: Electricity 3 2 4

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisites: MA 302, PHY 301.

FOURTH QUARTER

AHR 314 Heating Principles 3 4 5

Warm air systems, heat emitters, electric heating, forced hot water and steam heating systems including selection and sizing of equipment—registers, grills, furnaces,

boilers, radiators, baseboards, piping and ducts. Heating layout and specifications for an existing structure or one in blueprint stage will be prepared.

Prerequisites: PHY 301, DD 308.

AHR 315 Fuels and Burners 3 2 4

Fuels and burners used in supplying heat for various types of heating systems—coal, oil, natural gas, manufactured gas, liquified petroleum gas, and electricity. Experiments in equipment selection, installation, adjusting and servicing will be conducted.

Prerequisite: PHY 301.

DD 310 Descriptive Geometry 2 4 4

Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem.

Prerequisites: DD 302, MA 302.

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

SOC 302 Economics 3 0 3

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

PHY 311 Fluid Mechanics 3 0 3

Fundamental laws of fluid flow and application of these laws to the sizing of hot and cold water piping, steam piping, refrigerant piping, air ducts, pumps, and fans. Particular emphasis will be directed to calculations of capacity, horsepower, and head requirements of pumps and fans; to comparison of the several methods of piping and air duct sizing; and to methods of fluid flow measurement.

Prerequisites: MA 303, PHY 302.

FIFTH QUARTER

AHR 318 Air Conditioning Principles 5 6 8

An introduction to air distribution. Humidity, saturated and unsaturated mixtures; psychrometric charts and graphs; specific heat and air flow calculations, heat load calculations, the state of mixture of two air streams, bypass factor and dehumidification.

Prerequisite: AHR 313.

AHR 316 Circuits and Controls 4 2 5

Electric, Electronic and Pneumatic controls as related to ventilation, refrigeration and air conditioning systems. Practice in layouts, including symbols and schematic dia-

grams. Laboratory work in installation of control systems. Test instruments and their use. System adjustments for proper operation.

Prerequisites: AHR 313, AHR 314, PHY 303.

Corequisite: AHR 318.

DD 316 Air Conditioning Systems Drawings 2 3* 3

Drawing of air conditioning systems and study of related architectural and structural elements. Sheet metal intersections and developments and types of duct insulation. Air conditioning and refrigeration layouts, diagrams and schematics.

Prerequisites: DD 308, AHR 314.

ISc 301 Industrial Organization and Management 3 0 3

Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.

Prerequisite: None.

SIXTH QUARTER

AHR 319 Air Conditioning Systems Design 5 6 8

Self-contained units, remote units, unitary systems and control systems. Chilled water units, air duct units, high velocity duct units. Air and/or absorption systems, air handling and filtering systems.

Prerequisites: AHR 318, AHR 315, AHR 314.

AHR 317 Estimating and Contracts 3 4 5

Cost estimation, plans and specifications, equipment take-off, materials take-off, labor take-off, sub-contractors' estimates, overhead cost, and bid and contract procedures.

Prerequisites: AHR 318, DD 316.

SOC 301 Human Relations 2 0 2

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations, personal and group dynamics and self-adjustment.

Prerequisite: None.

AHR 320 Seminar and Research 1 4 3

Successful completion of the Air Conditioning and Refrigeration curriculum is climaxed by the student's conducting a research project and writing a report on this project. The student, through consultation with the instructors, will choose individual projects that will, when feasible, involve an actual installation. Frequent conferences with instructor will guide the student in the progress of research and in the preparation of the report.

Prerequisites: AHR 314, AHR 316, AHR 318.

DISTRIBUTION AND MARKETING TECHNOLOGY

INTRODUCTION

Purpose of Curriculum

Since 1957 more than half of the employed people in the United States have been engaged in distributing goods or rendering services. Leading manufacturers recently stated ". . . our major problem is in marketing . . ." This means that major opportunities exist in fields of marketing and distribution. Young people who are educationally and personally qualified can achieve great satisfaction and financial rewards through careers in distribution.

In North Carolina the opportunities in business are especially bright. The population of the State is becoming increasingly urban and much more differentiating in its demands for goods and services. With the increasing industrial development in this State, it becomes essential to market our products more effectively. In many instances business has become increasingly competitive, much more highly organized and automated. This situation limits the better opportunities in business to those with specialized education beyond the high school level.

CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
ENG	301	Reading Improvement	2	0	2
ENG	302	English	3	0	3
BUS	312	Marketing	3	0	3
BUS	311	Business Mathematics	3	0	3
SOC	302	Economics	3	0	3
BUS	313	Occupational Orientation	1	4	3
			15	4	17
SECOND QUARTER					
BUS	305	Business Speech	3	2	4
SOC	303	Introduction to Psychology	3	0	3
BUS	317	Sales Development	3	2	4
BUS	320	Accounting	5	2	6
BUS	314	Occupational Analysis	1	4	3
			15	10	20

THIRD QUARTER

BUS	310	Written Sales Communications	3	2	4
BUS	316	Retailing	3	0	3
BUS	321	Accounting	5	2	6
BUS	319	Credit Procedures and Problems	3	0	3
BUS	315	Occupational Research	1	4	3
			<u>15</u>	<u>8</u>	<u>19</u>

SUMMER SESSION

BUS	338	Work Experience and Project	231 MINIMUM HOURS 7		
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FOURTH QUARTER

BUS	326	Business Organization and Operation	3	0	3
BUS	327	Advertising	3	2	4
BUS	328	Business Insurance	3	0	3
BUS	322	Accounting	5	2	6
BUS	329	Marketing Research	1	4	3
			<u>15</u>	<u>8</u>	<u>19</u>

FIFTH QUARTER

BUS	332	Sales Promotion Management	3	2	4
BUS	333	Personnel Management	3	0	3
BUS	334	Transportation	3	0	3
BUS	318	Business Law	5	0	5
BUS	330	Marketing Research	1	4	3
Elective*			3	0	3
			<u>18</u>	<u>6</u>	<u>21</u>

SIXTH QUARTER

BUS	335	Business Management	3	0	3
BUS	336	Economics of Distribution	3	0	3
BUS	337	Wholesaling	3	0	3
BUS	331	Marketing Research	1	4	3
Elective*			6	0	6
			<u>16</u>	<u>4</u>	<u>18</u>

* Elective subjects must be related to the student's career objective and may be selected from courses offered by the Technical Institute or Industrial Education Center. Elective subjects include merchandising, warehousing, banking, and typing.

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
ENG	301	Communicative Skills: Reading Improvement	2	0	2

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

ENG 302 Communicative Skills: English 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

BUS 312 Marketing 3 0 3

A study of the marketing structure within the framework of the U. S. economic system. It includes the study of the movement of goods from producer to consumer through various channels of distribution, the functions of marketing, and the social and economic implications.

Prerequisite: None.

BUS 311 Business Mathematics 3 0 3

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, insurance, taxes and other pertinent uses of mathematics in the field of business.

Prerequisite: None.

SOC 302 Economics 3 0 3

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

BUS 313 Occupational Orientation 1 4 3

Orients the student to the business world through basic research of business practices including a study of how and why certain company policies, rules and regulations are established. The student learns how to study and utilize library facilities in preparing various reports and analyses on such topics as: business etiquette, how to apply for a job, employee-employer relations.

Prerequisite: None.

SECOND QUARTER

BUS 305 Business Speech 3 2 4

Develops the ability to speak correctly, persuasively and with confidence in sales situations, training session, business conferences—small and large.

Prerequisite: ENG 302.

SOC 303 Introduction to Psychology 3 0 3

Designed to provide an understanding of the basic psychological concepts of human behavior. The phenomenal aspects of the individual's behavior as he strives to adapt to his social and economic environment will be explored.

Prerequisite: None.

BUS 317 Sales Development**3 2 4**

A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required.

Prerequisite: None.

BUS 320 Accounting**5 2 6**

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned.

Prerequisite: None.

BUS 314 Occupational Analysis**1 4 3**

Provision for research centers around the study of functions performed in selected jobs in distribution. Students learn methods of job analysis and application of job analysis techniques. Self analysis of and by each student is made. Ultimate objective is to help the student determine his career objective.

Prerequisite: BUS 313.

THIRD QUARTER**BUS 310 Written Sales Communications****3 2 4**

Develops skills and techniques in writing business communications. Emphasis is placed on writing action-getting sales letters and prospectuses. Business reports, summaries of business conferences, spot announcements for radio and television as well as letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry are also included in this course.

Prerequisite: ENG 302.

BUS 316 Retailing**3 0 3**

A study of the role of retailing in the economy including development of present retail structure, functions performed, principles governing effective operation and managerial problems resulting from current economic and social trends.

Prerequisite: None.

BUS 321 Accounting**5 2 6**

Partnership and corporation accounting including a study of payrolls, Federal and State Taxes. Emphasis is placed on the recording, summarizing and interpreting data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems.

Prerequisite: BUS 320.

BUS 319 Credit Procedures and Problems**3 0 3**

Principles and practices in the extension of credit; collection procedures; laws pertaining to credit extension and collection are included.

Prerequisite: None.

BUS 315 Occupational Research**1 4 3**

Selection and planning of a project related to the student's work experience as provided for in BUS 338—**Work Experience and Project**.

Prerequisite: BUS 314.

SUMMER SESSION

BUS 338 Work Experience and Project

231 MINIMUM HOURS 7

A minimum of 231 clock hours of related on-the-job work experience during the summer between the first and second school year. The employing firm and the type of work experience must be approved by the school. As a part of this course, the student will conduct and make a written report on a project related to his job training employment. The project must be of a practical nature. The project and grade for this course will be determined jointly by the student's employer and the administration.

Prerequisite: BUS 315.

FOURTH QUARTER

BUS 326 Business Organization and Operation

3 0 3

A study of the legal structures of the various types of business organizations, methods of financing, internal organization and management.

Prerequisite: None.

BUS 327 Advertising

3 2 4

The role of advertising in a free economy and its place in the media of mass communications. A study of advertising appeals; product and market research; selection of media; means of testing effectiveness of advertising. Theory and practice of writing advertising copy for various media.

Prerequisite: None.

BUS 328 Business Insurance

3 0 3

A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included.

Prerequisite: None.

BUS 322 Accounting

5 2 6

Thorough working knowledge of concepts used in preparation and interpretation of financial statements. Each item of the income statement and balance sheet is carefully analyzed.

Prerequisite: BUS 321.

BUS 329 Marketing Research

1 4 3

Acquaintance with sources of information and data pertaining to business and industry published by business, industry, governments and educational institutions. To teach the student how to interpret statistical charts and data.

Prerequisite: None.

FIFTH QUARTER

BUS 332 Sales Promotion Management

3 2 4

The scope and activities of sales promotion with emphasis on the coordination of advertising, display, special events, and publicity. External and internal methods of promoting business; budgeting, planning, and implementing the plan.

Prerequisite: BUS 327.

BUS 333 Personnel Management**3 0 3**

Principles of human relationships; selection of personnel by interviewing and testing; and training of personnel.

Prerequisite: None.

BUS 334 Transportation**3 0 3**

Introduction to transportation media—their history and development. A practical consideration of the transportation problems in business.

Prerequisite: None.

BUS 318 Business Law**5 0 5**

Basic business laws, including the law of contracts, negotiable instruments, agency, partnership, corporation, deeds of conveyance, etc., will be covered. A primary objective of the course is to enable the student to know when to consult a professional lawyer.

Prerequisite: None.

BUS 330 Marketing Research**1 4 3**

Familiarization with market research studies, objectives, how they are planned, conducted, reported and interpreted.

Prerequisite: BUS 329.

SIXTH QUARTER**BUS 335 Business Management****3 0 3**

Principles of business management including overview of major functions of management such as planning, staffing, controlling, directing, and financing. Clarification of the decision-making function versus the operating function. Role of management in business—qualifications and requirements.

Prerequisite: None.

BUS 336 Economics of Distribution**3 0 3**

How our business system operates. The free enterprise philosophy is developed, followed by study of production, value and price, business cycles and other economic theories.

Prerequisite: SOC 302.

BUS 337 Wholesaling**3 0 3**

The development of wholesaling; present day trends in the United States. A study of the functions of wholesaling.

Prerequisite: None.

BUS 331 Marketing Research**1 4 3**

The student receives experience in planning, conducting, reporting, and interpreting an elementary market research study. He may work on an individual basis or as a member of a group.

Prerequisite: BUS 330.

ARCHITECTURAL TECHNOLOGY—FURNITURE TECHNOLOGY—MECHANICAL TECHNOLOGY DRAFTING AND DESIGN

INTRODUCTION

Purpose of Curriculum

This curriculum guide was prepared for the purpose of outlining a training program for students of drafting and design technology. There are certain identifiable duties which are common to all technicians of this general classification and which comprise the basic areas of technical knowledge they need. This curriculum has been designed for training persons in the accepted performance of these basic duties that will be assigned, and to enable the individual student to become proficient in a short time after he becomes employed in the industry.

Courses in general education have been included to give a student the assurance that comes with education upon a broad base. The technician associates with many levels of thought and expression—administrative personnel, scientists, engineers, skilled workmen—and must be able to communicate effectively with all levels. Courses in the skills of communication, human relations, economics and the field of industrial organization and management have been provided to assist the student to develop understanding and confidence. Courses containing essential information from related subject areas, such as mathematics, physics, and mechanics have been included in order to provide the student a better academic base for his training.

CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
DD	301	Technical Drafting	2	6	4
MA	301	Technical Mathematics	5	0	5
ENG	301	Reading Improvement	2	0	2
PHY	301	Physics: Properties of Matter	3	2	4
ISc	301	Industrial Organization & Mgmt.	3	0	3
			15	8	18

SECOND QUARTER

DD	302	Technical Drafting	2	6	4
MA	302	Technical Mathematics	5	0	5
ENG	302	English	3	0	3
PHY	302	Physics: Work, Energy, Power	3	2	4
DD	335	General Chemistry	4	2	5
			<hr/> 17	<hr/> 10	<hr/> 21

THIRD QUARTER

DD	303	Technical Drafting	2	6	4
MA	303	Technical Mathematics	5	0	5
ENG	303	Technical Writing	3	0	3
SOC	302	Economics	3	0	3
DD	310	Descriptive Geometry	2	4	4
ENG	304	Speech	2	0	2
			<hr/> 17	<hr/> 10	<hr/> 21

FOURTH QUARTER

(1) ADD	304	Technical Drafting	2	6	4
(2) FDD	304	Technical Drafting	2	6	4
(3) MDD	304	Technical Drafting	2	6	4
(1-2) DES	304	Visual Design I	2	6	4
(1-2) TD	304	Tectonic Design	2	6	4
(3) MECH	301	Materials, Tools & Processes	2	2	3
(3) MECH	302	Materials, Tools & Processes	2	2	3
(3) PHY	303	Physics: Electricity	3	2	4
(3) MECH	304	Metallurgy	3	2	4

FIFTH QUARTER

(1) ADD	305	Design Drafting	2	6	4
(2) FDD	305	Design Drafting	2	6	4
(3) MDD	305	Design Drafting	2	6	4
(1-2) DES	305	Visual Design II	2	4	4
(1) ASM	305	Strength of Materials	3	0	3
(1) ACM	305	Construction Materials & Methods	3	0	3
(1) AS	305	Architectural Specifications	1	0	1
(1) SUR	305	Surveying	2	1	2
(2) MM	306	Upholstery Materials & Methods	2	2	3
(2) MM	305	Case Materials & Methods	2	2	3
(3) MECH	305	Strength of Materials	3	2	4
(3) PHY	305	Hydraulics & Pneumatics	2	4	4
(3) DD	311	Mechanisms	3	2	4

SIXTH QUARTER

(1) ADD	306	Design Drafting	4	10	8
(2) FDD	306	Design Drafting	4	10	8
(3) MDD	306	Design Drafting	4	6	6
(1-2-3) SOC	301	Human Relations	2	0	2
(1) ASD	306	Structural Design	3	0	3
(1) ME	306	Mechanical Equipment	2	2	3
(2) FD	306	Styling	2	4	4
(3) ELN	301	Industrial Control	3	2	4
(3) DD	312	Jig & Fixture Design	2	4	4

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE

FIRST QUARTER

Course Hours Per Week Class	Lab.	Quarter Hours Credit
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DD 301 Technical Drafting

2	6	4
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Introduction to drafting and design practices and principles. Attainment of basic skills and techniques of drafting: use of drafting equipment; lettering; freehand orthographic and pictorial sketching; geometric construction; orthographic instrument drawing of principal views; and standards and practices of dimensioning and noting. Methods of reproducing, filing, and storing drawings are studied and the student is introduced to "working drawings."

Prerequisite: None.

MA 301 Technical Mathematics

5	0	5
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The real number system is developed as an extension of natural numbers, integers, and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative.

Prerequisite: None.

ENG 301 Communicative Skills: Reading Improvement

2	0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

PHY 301 Physics: Properties of Matter

3	2	4
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A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

Prerequisite: None.

ISc 301 Industrial Organization and Management

3	0	3
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Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.

Prerequisite: None.

SECOND QUARTER

DD 302 Technical Drafting

2	6	4
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The application of orthographic projection principles to the more complex drafting problems, primary and secondary auxiliary views, simple and successive revolutions, and sections and conventions will be studied. The introduction of the graphical an-

alysis of space problems involving points, lines, planes, and a combination of these elements. Precision and limit dimensioning practices.

Prerequisite: DD 301.

MA 302 Technical Mathematics

5 0 5

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered.

Prerequisite: MA 301.

ENG 302 English

3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

PHY 302 Physics: Work, Energy, Power

3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

Prerequisites: PHY 301, MA 301.

DD 335 General Chemistry

4 2 5

This course involves a study of the physical and chemical properties of substances, chemical changes, elements, compounds, gases, chemical combinations, weights and measurements, theory of metals, acids, bases, salts, solvents, solutions and emulsions. In addition, a study is made of carbohydrates, electro-chemistry, electrolytes and electrolysis in their application of chemistry to industry.

Prerequisite: None.

THIRD QUARTER

DD 303 Technical Drafting

2 6 4

Intersection and developments and their practical solutions. Where applicable, model solutions accompany the problems. The various techniques employed to produce and render isometric and oblique drawings, isometric, dimetric and trimetric projections, will be included.

Prerequisite: DD 302.

MA 303 Technical Mathematics

5 0 5

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate systems and their applications constitute other areas of study.

Prerequisite: MA 302.

ENG 303 Technical Writing**3 0 3**

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

Prerequisite: ENG 302.

SOC 302 Economics**3 0 3**

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

DD 310 Descriptive Geometry**2 4 4**

Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem.

Prerequisites: DD 302, MA 302.

ENG 304 Communicative Skills: Speech**2 0 2**

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

FOURTH QUARTER**(1) ADD 304 Technical Drafting****2 6 4**

An introduction to architectural Drafting in the study of working drawings, organization, basic construction methods, conventions, symbols, drafting room organization and relationship of personnel within the architectural office.

Prerequisite: DD 303.

(2) FDD 304 Technical Drafting**2 6 4**

A study of the anatomical relationships influencing furniture construction and design. Methods of detailing, general furniture sizes, standard parts, dimensioning and noting practices will be explored. Preliminary sketches, scale drawings, full size drawings will be made.

Prerequisite: DD 303.

(3) MDD 304 Technical Drafting**2 6 4**

Applications and constructions of charts, graphs, and nomographs in engineering and technical data. Screw threads, springs, keys, rivets, piping, and welding symbols, methods of representing and specifying will be covered. Basic mechanisms of motion transfer, gears and cams, will be studied and drawn with emphasis on methods of specifying, calculating, dimensions, and delineating.

Prerequisite: DD 303.

(1-2) DES 304 Visual Design I**2 6 4**

This course is a study of the basic vocabulary of two-dimensional design; point, line, texture, value and color. Application of this vocabulary in drawing and elementary design problems leading to an understanding of two-dimensional form and space.

Prerequisite: None.

(1-2) TD 304 Tectonic Design**2 6 4**

An exploration of three-dimensional design using a variety of materials for shaping, construction and ornamenting.

Prerequisite: None.

(3) MECH 301 Materials, Tools and Processes**3 2 3**

An overall view of the methods and procedures used to transform raw materials into finished products. Characteristics of metals, woods, and plastics and how these characteristics affect the selection and use of materials and methods of production in the manufacture of an object. Unit production system, sand casting, forging and allied processes, welding, sheet metal working processes, and woodworking processes constitute areas of study.

Prerequisite: None.

(3) MECH 302 Materials, Tools and Processes**2 2 3**

Study of manufacturing processes involving machining of materials. The operation of lathes, grinders, drills, milling machines, shapers, planers, metal sawing machines, broaching machines, gear cutting machines, and finishing machines. Dimensional control and precision measuring as applied to machining of materials.

Prerequisite: MECH 301.

(3) PHY 303 Physics: Electricity**3 2 4**

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course.

Prerequisites: PHY 301, MA 302.

(3) MECH 304 Metallurgy**3 2 4**

Properties of metals and various methods of changing these properties, classifications of metals, powder metallurgy and factors contributing to production and selection of metals for use.

Prerequisite: None.

FIFTH QUARTER**(1) ADD 305 Design Drafting****2 6 4**

Further working drawings will be made relative to more complex structures with greater emphasis on cost.

Prerequisite: ADD 304.

(2) FDD 305 Design Drafting**2 6 4**

Preliminary design sketches of both case goods and upholstered pieces will be carried through detail drawings accompanied by specifications and bills of materials.

Architectural considerations related to customer services and showroom planning will be studied.

Prerequisites: FDD 304, DES 304, TD 304.

(3) MDD 305 Design Drafting **2 6 4**

Basic design is introduced in the study of motion transfer mechanisms as they relate to power trains. Principles of design sketching, design drawing, layout drafting, detailing from layouts, production drawings and simplified drafting practices constitute areas of study. Types and methods of specifying materials and workmanship are an integral part of the course.

Prerequisites: DD 304, MA 302, PHY 303.

(1-2) DES 305 Visual Design II **2 4 4**

An extension of DES 304 dealing with basic problems in representing lines, planes and solids in space; rendering techniques and culminating with the planning and organization of exhibits.

Prerequisites: DES 304, TD 304.

(1) ASM 305 Strength of Materials **3 0 3**

Structural materials as used in building construction will be studied with computations of stresses, strains and sizing of elements. Basic limitations as applied to construction, steel and wood will be investigated.

Prerequisites: PHY 301, PHY 302, MA 301, MA 302, MA 303.

(1) ACM 305 Construction Materials & Methods **3 0 3**

Materials used in the construction of dwellings and commercial buildings, their economic values and limitations affected by locality budget and codes.

Prerequisite: None.

(1) AS 305 Architectural Specifications **1 0 1**

The purpose and writings of specifications will be studied along with practical applications of working drawings made previously in this course. Contract documents will be analyzed and studied.

Prerequisite: ADD 304.

(1) SUR 305 Surveying **2 1 2**

Basic instrumentations and topography will be studied together with field trips and drafting room applications of site surveying.

Prerequisites: MA 301, MA 302, MA 303.

(2) MM 306 Upholstery Materials & Methods **2 2 3**

Types of materials used in upholstering and construction methods which affect the design of furniture, materials characteristics, fastening methods, accessory materials, frame types and construction are included in this course.

Prerequisite: None.

(2) MM 305 Case Materials & Methods **2 2 3**

A comprehensive study of the materials and methods of furniture manufacturing. Basic woodworking operations and methods of joining wood, metals, plastics, appliques, edging and hardware will be included.

Prerequisite: None.

(3) MECH 305 Strength of Materials**3 2 4**

Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such as static, impact, varying and dynamic. Analyses of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components.

Prerequisites: PHY 303, MA 303.

(3) PHY 305 Hydraulics & Pneumatics**2 4 4**

The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electro-hydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs.

Prerequisite: PHY 302.

(3) DD 311 Mechanisms**3 2 4**

Mathematical and drafting room solutions of problems involving the principles of machine elements. Study of motions of linkages, velocities and acceleration of points within a link mechanism; layout methods for designing cams, belts, pulleys, gears and gear trains.

Prerequisites: DD 304, MA 303, PHY 302.

SIXTH QUARTER**(1) ADD 306 Design Drafting****4 10 8**

Research to solve a problem in design by consulting manuals and periodicals. A problem will be assigned comprising preliminary programs, preliminary sketches, presentation drawings and a complete set of working drawings. Then drawings will be obtained so as to enable the Draftsman to apply his previous knowledge and incorporate it in drawings which could be used for erecting a permanent structure.

Prerequisites: ADD 304, ADD 305, All Design Courses.

(2) FDD 306 Design Drafting**4 10 8**

Research to solve the design problem of developing a correlated furniture group using charts, periodicals, lab experiments and reference sources. A written report, preliminary design sketches, finished details, pictorial drawings and specifications are required as a part of the problem.

Prerequisites: FDD 304, FDD 305, All Design Courses.

(3) MDD 306 Design Drafting**4 6 6**

Research to solve a problem in design by consulting various manuals, periodicals, and through laboratory experiments. A written technical report, preliminary design sketches, layout drawings, detail drawings, assembly and sub-assembly drawings, pictorial drawings, exploded pictorial assembly, patent drawings and specifications are required as a part of the problem.

Prerequisites: DD 305, DD 310.

(1-2-3) SOC 301 Human Relations**2 0 2**

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations; personal and group dynamics and self-adjustment.

Prerequisite: None.

(1) ASD 306 Structural Design **3 0 3**

Practical applications and working drawings will be made and existing drawings shall be studied to understand "structural investigation."

Prerequisite: ASM 305.

(1) ME 306 Mechanical Equipment **2 2 3**

A general study of heating, air conditioning, plumbing and electrical installation as used in residential and commercial construction. This course limits itself to give the architectural Draftsman the ability to interpret and understand working drawings.

Prerequisite: None.

(2) FD 306 Styling **2 4 4**

A study of the periods and styles of furniture and the factors which influenced their development. Methods of styling and decorating will be included with basic principles of design.

Prerequisite: None.

(3) ELN 301 Industrial Controls **3 2 4**

Industrial controls is the study of modern methods of controlling machinery by electronic circuitry. Machinery controls and electronic mechanisms that automatically operate machines will be studied. Types of motors, generators, control signals and devices, thyatron, gates, switches, and servomechanism circuits are major areas of study.

Prerequisite: PHY 303.

(3) DD 312 Jig and Fixture Design **2 4 4**

Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with the types of jigs and fixtures and their design.

Prerequisites: DD 305, DD 311.

ELECTRONICS TECHNOLOGY

INTRODUCTION

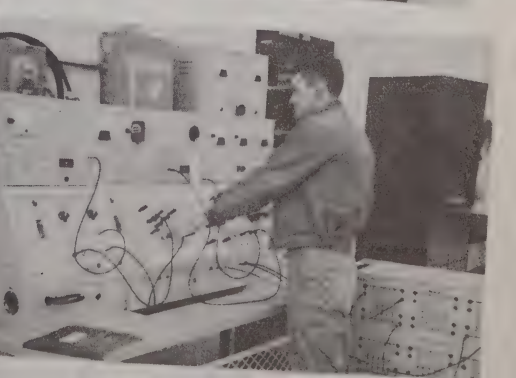
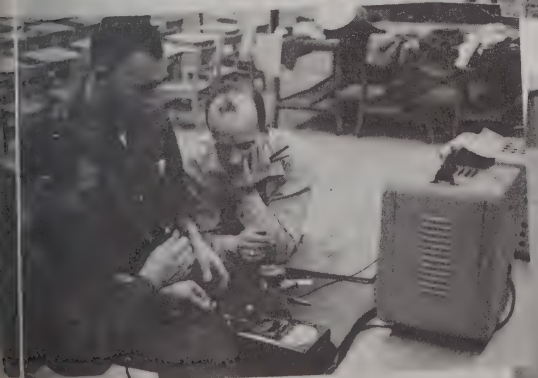
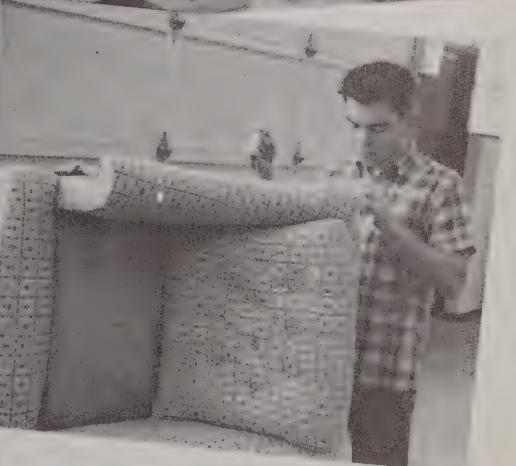
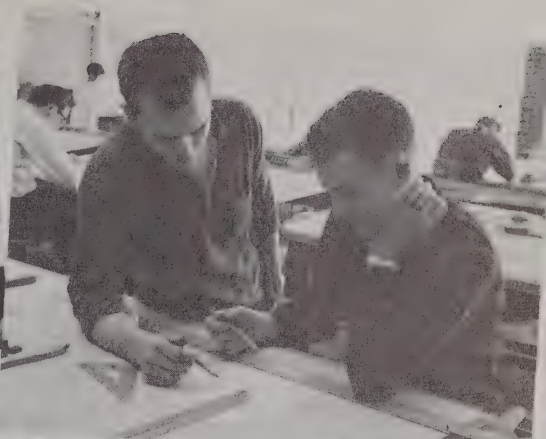
Purpose of Curriculum

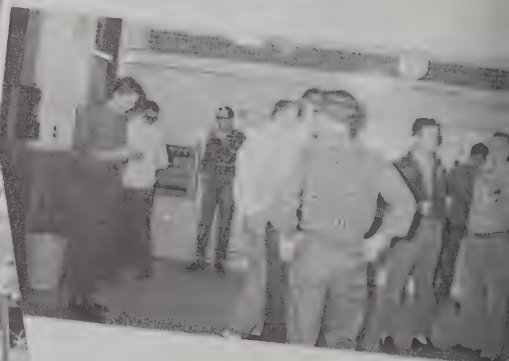
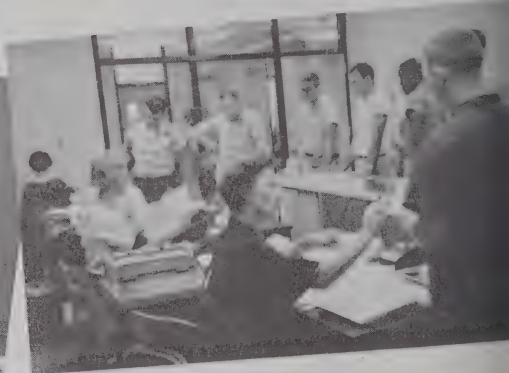
The field of electronics has developed at a rapid pace since the turn of the century. For many years the major concern of electronics was in the area of communications. Developments during World War II and in the period since have revolutionized production techniques. New industries have been established to supplement the need and demand for electronics equipment.

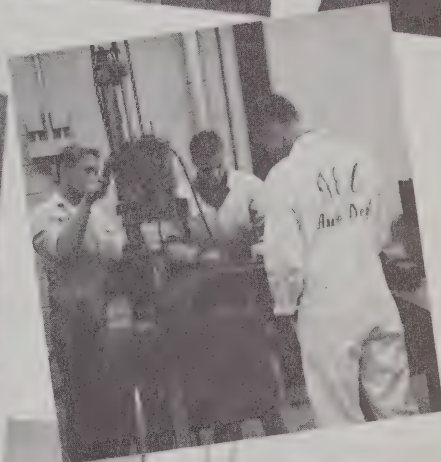
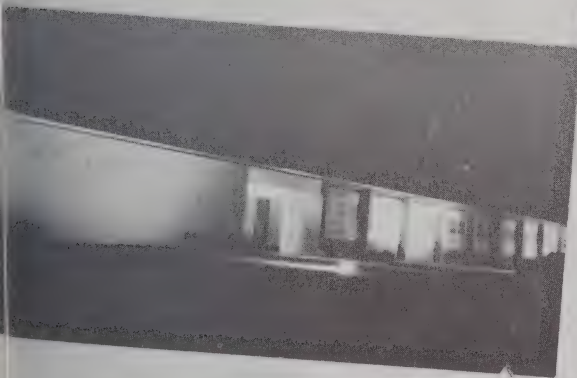
Many opportunities exist for men and women with a technical education in electronics. This curriculum provides a basic background in electronic related theory with practical applications of electronics for business and industry. Courses are designed to develop competent electronics technicians who may take their place as an assistant to an engineer, or as a liaison between the engineer and the skilled craftsman.

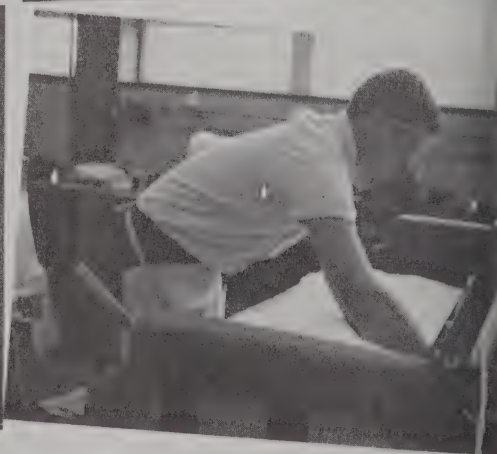
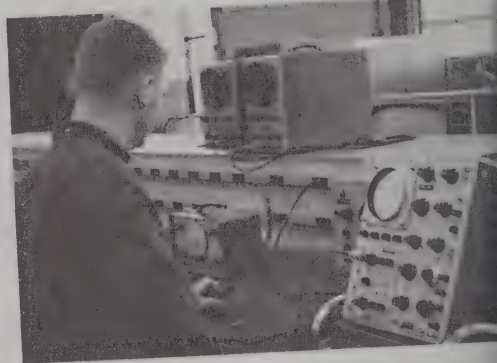
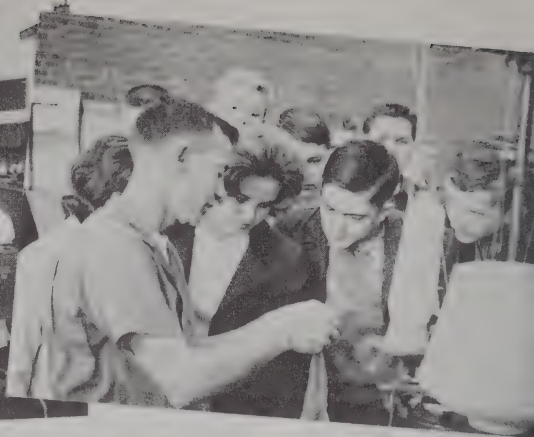
CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
MA	301	Technical Mathematics	5	0	5
PHY	301	Physics: Properties of Matter	3	2	4
ENG	301	Reading Improvement	2	0	2
DD	307	General Drafting	2	3*	3
ELEC	310	Direct Current Electricity	5	6	8
			<hr/> 17	<hr/> 11	<hr/> 22
SECOND QUARTER					
MA	302	Technical Mathematics	5	0	5
PHY	302	Physics: Work, Energy, Power	3	2	4
ENG	302	English	3	0	3
ELEC	311	Alternating Current Electricity	5	6	8
			<hr/> 16	<hr/> 8	<hr/> 20
THIRD QUARTER					
MA	303	Technical Mathematics	5	0	5
ENG	303	Technical Writing	3	0	3
SOC	301	Human Relations	2	0	2
ELN	312	Electronics I	5	8	9
			<hr/> 15	<hr/> 8	<hr/> 19









FOURTH QUARTER

MA	304	Technical Mathematics	3	0	3
PHY	304	Physics: Light and Sound	3	2	4
ENG	304	Speech	2	0	2
ELN	313	Electronics II	8	8	12
			<hr/> 16	<hr/> 10	<hr/> 21

FIFTH QUARTER

ISc	301	Industrial Organization and Management	3	0	3
ELN	316	Transistor Applications	5	4	7
ELN	317	Communications and Ultra High Frequency	2	4	4
ELN	318	Special Circuitry	5	4	7
			<hr/> 15	<hr/> 12	<hr/> 21

SIXTH QUARTER

SOC	302	Economics	3	0	3
ELN	319	Instrumentation	5	6	8
ELN	320	Circuit Analysis and Maintenance	5	6	8
			<hr/> 13	<hr/> 12	<hr/> 19

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE

FIRST QUARTER

MA 301 Technical Mathematics

Course Hours Per Week		Quarter Hours Credit
Class	Lab.	
5	0	5

The real number system is developed as an extension of natural numbers, integers, and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative.

Prerequisite: None.

PHY 301 Physics: Properties of Matter

3	2	4
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A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

Prerequisite: None.

ENG 301 Communicative Skills: Reading Improvement

2	0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

DD 307 General Drafting 2 3* 3

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

Prerequisite: None.

ELEC 310 Direct Current Electricity 5 6 8

Basic electricity subjects include: structure of matter, electrical terminology and symbols, electron theory of current flow, magnets and magnetic fields. Rigorous mathematical analysis of direct current resistive circuits. Ohm's Law, Kirchhoff's Laws, Thevenin's Theorem, Norton's Theorem, the Superposition Principle and loop current method. Solution of complex resistive networks. Fundamental principles of inductors, capacitors, and time constants circuits are introduced.

Prerequisite: None.

SECOND QUARTER

MA 302 Technical Mathematics 5 0 5

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered.

Prerequisite: MA 301.

PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

Prerequisite: MA 301.

ENG 302 Communicative Skills: English 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

ELEC 311 Alternating Current Electricity 5 6 8

Alternating current and voltage: alternating current theory. Mathematical analysis is made of both sine and non-sine wave forms. Inductive reactance, capacitive reactance, and impedance characteristics of alternating current circuits are investigated. The use of vector and complex numbers in circuit impedance. Series and parallel resonant circuit conditions are compared and practical application of these conditions explained.

Prerequisites: ELEC 310, MA 301, PHY 301.

THIRD QUARTER

MA 303 Technical Mathematics 5 0 5

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate systems and their applications constitute other areas of study.

Prerequisite: MA 302.

ENG 303 Communicative Skills: Technical Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

Prerequisite: ENG 302.

SOC 301 Human Relations 2 0 2

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations; personal and group dynamics and self-adjustment.

Prerequisite: None.

ELN 312 Electronics I 5 8 9

A treatment of electron tubes, semi-conductors and their associated circuitry; thermionic emission; diode, triode, tetrode and pentode characteristics. Theory of semi-conductor diode and transistor operation is studied in detail. Application of vacuum tubes and semi-conductors in power supplies, voltage amplifiers, power amplifiers, and the advantages and disadvantages of each considered.

Prerequisites: ELEC 310, MA 301, PHY 301.

FOURTH QUARTER

MA 304 Technical Mathematics 3 0 3

A further study of analytical geometry, algebra, and calculus: the binomial expansion, arithmetic and geometric progressions, polynomial functions and methods of solution, integration techniques and use of integral tables, polar equations, and an introduction to solid analytical geometry.

Prerequisite: MA 303.

PHY 304 Physics: Light and Sound 3 2 4

A study of sound and wave motion and its technical applications to industry and related fields. Light and illumination. Principles of optical instruments. Practical aspects are emphasized.

Prerequisite: MA 301.

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth

in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

ELN 313 Electronics II 8 8 12

Design and analysis of vacuum tube and transistor oscillators, radio frequency analysis and intermediate frequency amplifiers. Frequency response, stage gain, distortion, noise characteristics and frequency stability will be explored.

Prerequisites: ELN 312, MA 303.

FIFTH QUARTER

ISc 301 Industrial Organization and Management 3 0 3

Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.

Prerequisite: None.

ELN 316 Transistor Applications 5 4 7

Transistor circuitry and design problems. Junction diodes, transistor triodes, tunnel and zener diodes with associated circuitry. Temperature variation, transit time, and frequency response are studied in detail.

Prerequisites: ELN 313, MA 304.

ELN 317 Communications and Ultra High Frequency 2 4 4

Application of previously studied circuits to the broad field of communications and ultra high frequency. Amplitude and frequency modulated transmitters, receivers, wave guides, cavity resonators; klystron, magnetron and traveling wave tubes are discussed.

Prerequisite: ELN 313.

ELN 318 Special Circuitry 5 4 7

The design and analysis of special circuitry: wave shaping, pulse techniques, broad-band amplifiers, diode switches, multivibrators, gates, magnetic amplifiers, chopper amplifiers, clipper and clamping circuits, synchro and servo systems, photo control devices, step counters and other specific application circuitry.

Prerequisites: ELN 314, ELN 316.

SIXTH QUARTER

SOC 302 Economics 3 0 3

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

ELN 319 Instrumentation

568

A basic study of sensory devices for detecting changes in pressure, temperatures, sound, light and electricity; the associated circuitry and indicating devices.

Prerequisites: ELN 316, ELN 318.

ELN 320 Circuit Analysis and Maintenance

568

Systematic analysis of complex circuitry. Methods of locating and correcting malfunctions. Troubleshooting by voltage measurements; resistance measurements, and waveform observations. Schematic reading and interpretation.

Prerequisites: ELN 319, MA 304, PHY 304.

CATAWBA COUNTY INDUSTRIAL EDUCATION CENTER

TRADE DIVISION PROGRAMS OF STUDY

Auto Mechanics	—4 qtrs.
Electrical Installation & Maintenance	—3 qtrs.
Knitting Machine Fixing	—2 qtrs.
Machine Shop	—4 qtrs.
Masonry	—3 qtrs.
Practical Nursing	—4 qtrs.
*Radio & TV Repair	—8 qtrs.
Engineering & Technical Secretarial	—4 qtrs.
*Upholstery Sewing	—2 qtrs.
*Upholstery	—3 qtrs.

* Course meets only 3 hours per day.

AUTOMOTIVE MECHANICS

INTRODUCTION

Purpose of Curriculum

This curriculum provides a training program for developing the basic knowledge and skills needed to inspect, diagnose, repair or adjust automotive vehicles. Manual skills are developed in practical shop work. Thorough understanding of the operating principles involved in the modern automobile comes in class assignments, discussion, and shop practice.

Complexity in automotive vehicles increases each year because of scientific discovery and new engineering. These changes are reflected not only in passenger vehicles, but also in trucks, buses and a variety of gasoline-powered equipment. This curriculum provides a basis for the student to compare and adapt to new techniques for servicing and repair as vehicles are changed year by year.

CURRICULUM BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
FIRST QUARTER			Class	Lab.		Shop Prac.	Hours Credit
AUTO	121	Automotive Engines	3	0		12	7
MA	120	Fundamentals of Mathematics	5	0		0	5
ENG	101	Reading Improvement	2	0		0	2
PHY	104	Applied Physics I	1	2		0	2
			<hr/>	<hr/>		<hr/>	<hr/>
			11	2		12	16

SECOND QUARTER

AUTO	122	Automotive Electrical and Fuel Systems	3	0		12	7
PHY	105	Applied Physics II	1	2		0	2
ENG	102	Communication Skills	2	0		0	2
DD	121	Blueprint Reading	3	0		0	3
			<hr/>	<hr/>		<hr/>	<hr/>
			9	2		12	14

THIRD QUARTER

AUTO	123	Automotive Chassis and Suspensions	3	0		12	7
AHR	101	Automotive Air Conditioning	3	0		0	3
SOC	101	Human Relations	2	0		0	2
MECH	112	Welding	0	0		3	1
PHY	106	Applied Physics III	1	2		0	2
			<hr/>	<hr/>		<hr/>	<hr/>
			9	2		15	15

FOURTH QUARTER

AUTO	124	Automotive Power Train Systems	3	0	9	6
SOC	103	Management Procedures	3	0	0	3
AUTO	125	Automotive Servicing	3	0	9	6
			<hr/> 9	<hr/> 0	<hr/> 18	<hr/> 15

FIFTH QUARTER (DIESEL OPTION)

Dies	101	Diesel Fuel Systems	3	0	0	3
Dies	102	Diesel Engines I	5	0	6	7
Dies	103	Diesel Engines II	5	0	6	7
Dies	104	Diesel Engine Tune-up and Trouble Shooting	2	0	3	4
			<hr/> 15	<hr/> 0	<hr/> 15	<hr/> 21

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course	Hours	Per Week	Quarter
FIRST QUARTER			Class	Lab.	Shop Prac.	Hours Credit
AUTO 121	Automotive Engines		3	0	12	7

Development of a thorough knowledge and ability in using, maintaining, and storing the various hand tools and measuring devices needed in automotive repair work. Study of the construction and operation of components of automotive engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing.

Prerequisite: None.

MA 120	Fundamentals of Mathematics		5	0	0	5
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Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.

Prerequisite: None.

ENG 101	Reading Improvement		2	0	0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

PHY 104	Applied Physics I		1	2	0	2
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Introductory physics and its applications. Systems of measurement, theory of matter, properties of solids, liquids, and gases.

Prerequisite: None.

SECOND QUARTER

AUTO 122 Automotive Electrical and Fuel Systems

3 0 12 7

A thorough study of the electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment for the fuel and electrical system.

Prerequisite: AUTO 121.

PHY 105 Applied Physics II

1 2 0 2

Basic principles of electricity, types of electricity, and its production, transmission, and transformation. Such factors as the electron theory, electrical measurement, magnetism, electromagnetism, and the magnetic effects of electricity constitute major areas of study.

Prerequisite: PHY 104.

ENG 102 Communication Skills

2 0 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

Prerequisite: None.

DD 121 Blueprint Reading

3 0 0 3

Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures, and notes.

Prerequisite: None.

THIRD QUARTER

AUTO 123 Automotive Chassis and Suspensions

3 0 12 7

Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of suspension, steering and braking systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, front end, types and servicing of brakes.

Prerequisite: AUTO 122.

AHR 101 Automotive Air Conditioning

3 0 0 3

General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system.

Prerequisite: PHY 105.

SOC 101 Human Relations

2 0 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

MECH 112 Welding

0 0 3 1

Welding demonstrations by the instructor and practice by students in the welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding; bronze welding, silver-soldering, and flame cutting methods applicable to mechanical repair work.

Prerequisite: None.

PHY 106 Applied Physics III

1 2 0 2

Physical principles of force, energy, work and power; equilibrium and the laws of motion; principles of machines, mechanical advantage, and transmission of power in practical applications and the use of vectors and graphical presentations.

Prerequisites: PHY 104, MA 120.

FOURTH QUARTER**AUTO 124 Automotive Power Train Systems**

3 0 9 6

Principles and functions of automotive power train systems: clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair.

Prerequisites: PHY 105, PHY 106, AUTO 123.

SOC 103 Management Procedures

3 0 0 3

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

Prerequisite: None.

AUTO 125 Automotive Servicing

3 0 9 6

Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Troubleshooting of automotive systems, providing a full range of testing, adjusting, repairing and replacing experiences.

Prerequisite: AUTO 123.

ELECTRICAL INSTALLATION AND MAINTENANCE

INTRODUCTION

Purpose of the Curriculum

The rapid expansion of the national economy and the increasing development of new electrical products is providing a growing need for qualified people to install and maintain electrical equipment. By mid-1960 more than 350,000 were employed as either construction electricians or maintenance electricians. Between 5,000 and 10,000 additional tradesmen are required each year to replace those leaving the industry. It is expected that the total requirements for electrical tradesmen will reach 500,000 by 1965 and 700,000 by 1970. The majority of the electrical tradesmen today are trained through apprenticeship or on-the-job training programs.

This curriculum guide will provide a training program in the basic knowledge, fundamentals, and practices involved in the electrical trades. A large portion of the program is devoted to laboratory and shop instruction which is designed to give the student practical knowledge and application experience in the fundamentals taught in class.

CURRICULUM BY QUARTERS

			COURSE TITLE		Course	Hours	Per	Week	Quarter
FIRST QUARTER					Class	Lab.		Shop	Hours
MA	125	Electrical Math			5	0		0	5
ELEC	212	Direct and Alternating Current			7	8		3	12
ENG	101	Reading Improvement			2	0		0	2
					14	8		3	19
SECOND QUARTER									
ELEC	123	Alternating Current and Direct Current Machines and Controls			5	10		0	10
DD	120	Building Trades Blueprint Reading and Sketching			5	0		0	5
ENG	102	Communication Skills			2	0		0	2
SOC	101	Human Relations			2	0		0	2
					14	10		0	19

THIRD QUARTER

ELEC	124	Residential Wiring	5	0	9	8
ELN	118	Industrial Electronics I	4	4	0	6
SOC	103	Management Procedures				
		or				
ISc	102	Industrial Organizations	3	0	0	3
			<u>12</u>	<u>4</u>	<u>9</u>	<u>17</u>

FOURTH QUARTER

ELEC	125	Commercial and Industrial Wiring	5	0	9	8
ELN	119	Industrial Electronics II	5	6	0	8
			<u>10</u>	<u>6</u>	<u>9</u>	<u>16</u>

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course Hours	Per Week	Shop	Quarter
FIRST QUARTER			Class	Lab.	Prac.	Hours Credit
MA	125	Electrical Math	5	0	0	5

A study of fundamental concepts of algebra; basic operations of addition, subtraction, multiplication, and division; solution of first order equations, use of letters and signs, grouping, factoring, exponents, ratios, and proportions; solution of equations, algebraically and graphically; a study of logarithms and use of tables; an introduction to trigonometric functions and their application to right angles; and a study of vectors for use in alternating current.

Prerequisite: None.

ELEC	122	Direct and Alternating Current	7	8	3	12
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A study of the electrical structure of matter and electron theory, the relationship between voltage, current, and resistance in series, parallel, and series-parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchhoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits.

Prerequisite: None.

ENG	101	Reading Improvement	2	0	0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and the principles of vocabulary building are stressed.

Prerequisite: None.

SECOND QUARTER

ELEC	123	Alternating Current and Direct Current Machines and Controls	5	10	0	10
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Provides fundamental concepts in single and polyphase alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the

use of electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type control used in small appliances, such as: thermostats, times, or sequencing switches.

Prerequisites: ELEC 122, MA 125.

DD 120	Building Trades Blueprint Reading and Sketching	5	0	0	5
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Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches.

Prerequisite: None.

ENG 102	Communication Skills	2	0	0	2
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Development of the ability to communicate effectively with other individuals through the medium of good language usage in speaking and writing, to think more clearly, and to reason more forcefully in work problems pertaining to his job.

Prerequisite: None.

SOC 101	Human Relations	2	0	0	2
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Assistance in acquiring greater understanding of relation with other people through learning and applying some of the basic principles of human psychology. A study of the problems of the individual and his work situation in relation to the established organization of modern business and industry and in relation to government practices and labor organizations, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

THIRD QUARTER

ELEC 124	Residential Wiring	5	0	9	8
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Provides instruction and application in the fundamentals of blueprint reading, planning, layout, and installation of wiring in residential applications, such as: services, switch boards, lighting, fusing, wire sizes, branch circuits, conduits, National Electrical Code regulations in actual building mock-ups.

Prerequisites: ELEC 123, DD 120.

ELN 118	Industrial Electronics I	4	4	0	6
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Basic theory, operating characteristics, and application of vacuum tubes, such as: diodes, triodes, tetrodes, pentodes, and gaseous control tubes. An introduction to amplifiers using triodes, power supplies using diodes, and other basic applications.

Prerequisite: ELEC 123.

SOC 103	Management Procedures	3	0	0	3
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Development of procedures to familiarize the prospective businessman with the many important functions that must be carried on in the operations of a small business or enterprise. An introduction to the business world; problems of small business operation; basic business law, forms, and records; financial, ordering, and inventory problems; layout of equipment and offices; and methods of improving business and employer-employee relations.

Prerequisite: None.

ISc 102 Industrial Organizations 3 0 0 3

Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost.

Prerequisite: None.

FOURTH QUARTER

ELEC 125 Commercial and Industrial Wiring 5 0 9 8

Layout, planning, and installation of wiring systems in commercial and industrial complexes, with emphasis upon blueprint reading and symbols, the related National Electrical Codes, and the application of the fundamentals to practical experience in wiring, conduit preparation, and installation of simple systems.

Prerequisites: ELN 118, ELEC 124.

ELN 119 Industrial Electronics II 5 6 0 8

Basic industrial electronic systems, such as: motor controls, alarm systems, heating systems and controls, magnetic amplifier controls, welding control systems using thyatron tubes, and other basic types of systems commonly found in most industries.

Prerequisite: ELN 118.

KNITTING MACHINE FIXING

TRADE PREPARATORY

This is a 2 quarter course if taken 6 hours per day or 4 quarters if taken 3 hours per day. It is designed to give the student a comprehensive knowledge of the knitter fixing trade. The student will master the basic skills of machine fixing on different types of machines, tools, and repair operations. Listed below are some of the main points of instruction:

Mill Relationship

Mill Safety

Stitch Formation

Machines

Make Up

Top

Body

Heel

Feet

Ring Toe and Toe

Looper Line and Clip

Replacement of Parts and Attachments, Purpose

Identify Parts

Driving Mechanism

Main Drum

Stripper Drum

Dismantling and putting together of machines

Trouble Shooting

Fundamentals of Pattern Making

MACHINIST TRADE

INTRODUCTION

Purpose of Curriculum

This curriculum was prepared to meet a definite need for training of machinists. Surveys recently completed in North Carolina show that many of the existing industries lack time and facilities for training enough machinists to meet present and planned needs. Expanding industries already located in our State and new industries under development invariably express the need for skilled craftsmen who have the background knowledge and potential to advance.

This guide is designed to give learners the opportunity to acquire basic skills and the related technical information necessary to gain employment and build a profitable career in the machine shop industry in the State. It is comprised of the joint views of committees responsible for its development.

CURRICULUM BY QUARTERS

COURSE TITLE			Course	Hours	Per Week	Quarter Hours Credit
			Class	Lab.	Shop Prac.	
FIRST QUARTER						
MECH	121	Machine Shop Theory and Practice	3	0	12	7
MA	120	Fundamentals of Mathematics	5	0	0	5
DD	122	Blueprint Reading	5	0	0	5
ENG	101	Reading Improvement	2	0	0	2
			15	0	12	19
SECOND QUARTER						
MECH	122	Machine Shop Theory and Practice	3	0	12	7
MA	123	Machinist Mathematics	5	0	0	5
DD	123	Blueprint Reading	3	0	0	3
PHY	104	Applied Physics I	1	2	0	2
ENG	102	Communication Skills	2	0	0	2
			14	2	12	19
THIRD QUARTER						
MECH	123	Machine Shop Theory and Practice	3	0	12	7
MECH	124	Structure of Metals	3	2	0	4
PHY	105	Applied Physics II	1	2	0	2
SOC	101	Human Relations	2	0	0	2
			9	4	12	15
FOURTH QUARTER						
MECH	125	Machine Shop Theory and Practice	3	0	12	7
ISc	101	Industrial Specifications	2	0	0	2
MECH	111	Oxyacetylene Welding	2	0	3	3
MECH	126	Heat Treating Practice	0	0	3	1
ISc	102	Industrial Organizations	3	0	0	3
			10	0	18	16

COURSE DESCRIPTIONS BY QUARTERS

		COURSE TITLE	Course	Hours	Per	Week	Quarter
FIRST QUARTER			Class	Lab.		Shop	Hours
						Prac.	Credit
MECH 121	Machine Shop Theory and Practice		3	0		12	7

An introduction to the machinist trade and the potential it holds for the craftsman. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice.

Prerequisite: None.

MA 120	Fundamentals of Mathematics			5	0		0	5
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Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.

Prerequisite: None.

DD 122	Blueprint Reading			5	0		0	5
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Interpretation and reading of blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes.

Prerequisite: None.

ENG 101	Reading Improvement			2	0		0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

SECOND QUARTER

MECH 122	Machine Shop Theory and Practice			3	0		12	7
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Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine and shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course.

Prerequisite: MECH 121.

MA 123	Machinist Mathematics			5	0		0	5
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Fundamental geometric concepts and construction of plane and solid figures, surface and volume measurements, and related problems; introduction to trigonometry of the right triangle. Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems.

Prerequisite: MA 120.

DD 123 Blueprint Reading 3 0 0 3

Further practice in interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes.

Prerequisite: DD 122.

PHY 104 Applied Physics I 1 2 0 2

Introductory physics and its applications. Systems of measurement, theory of matter, properties of solids, liquids, and gases.

Prerequisite: None.

ENG 102 Communication Skills 2 0 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

Prerequisite: None.

THIRD QUARTER

MECH 123 Machine Shop Theory and Practice 3 0 12 7

Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculating, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder.

Prerequisites: MECH 121, MECH 122.

MECH 124 Structure of Metals 3 2 0 4

Elementary and practical approach to metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

Prerequisite: None.

PHY 105 Applied Physics II 1 2 0 2

Basic principles of electricity, types of electricity, and its production, transmission, and transformation. Such factors as the electron theory, electrical measurement, magnetism, electromagnetism, and the magnetic effects of electricity constitute major areas of study.

Prerequisite: PHY 104.

SOC 101 Human Relations 2 0 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

FOURTH QUARTER

MECH 125 Machine Shop Theory and Practice 3 0 12 7

Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry.

Prerequisites: MECH 121, MECH 122, MECH 123.

ISc 101 Industrial Specifications 2 0 0 2

Organizing and studying machine tool and hand tool specifications, job sheets and procedure sheets. Catalogs, specification sheets, and manufacturer's handbooks serve as reference sources.

Prerequisite: None.

MECH 111 Oxyacetylene Welding 2 0 3 3

Basic welding procedures and practice. The trainee will gain experience in the gas welding of small parts and tools. This course will present gas welding as it may be used by the machinist in the repair and manufacture of tools and equipment.

Prerequisite: None.

MECH 126 Heat Treating Practice 0 0 3 1

Working knowledge of the methods of treating ferrous and nonferrous metals. The effects of hardening, tempering, and annealing upon the structure and physical properties of metals. Trainees will be given the opportunity to acquaint themselves with the equipment and processes of heat treating.

Prerequisite: MECH 124.

ISc 102 Industrial Organizations 3 0 0 3

Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost.

Prerequisite: None.

MASONRY

This course provides a comprehensive knowledge of masonry. The student will get the related mathematics and blueprint reading, which will enable him to do a good job. The laboratory work will enable the student to apply his knowledge in developing his skills of the trade.

CURRICULUM BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
			Class	Lab.		Shop Prac.	Hours Credit
FIRST QUARTER							
MAS	111	Bricklaying I	3	0		6	3
MA	120A	Fundamentals of Math	3	0		0	3
DD	120A	Building Trades Blueprint Reading and Sketching	3	0		0	3
			<u>9</u>	<u>0</u>		<u>6</u>	<u>11</u>
SECOND QUARTER							
MAS	112	Bricklaying II	5	0		6	7
MA	120B	Fundamentals of Math	2	0		0	2
DD	120B	Building Trades Blueprint Reading and Sketching	2	0		0	2
			<u>9</u>	<u>0</u>		<u>6</u>	<u>11</u>
THIRD QUARTER							
MAS	113	General Masonry	4	0		6	6
MAS	114	Estimating	2	0		0	2
DD	126	Blueprint Reading for Masons	3	0		0	3
			<u>9</u>	<u>0</u>		<u>6</u>	<u>11</u>

DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
			Class	Lab.		Shop Prac.	Hours Credit
FIRST QUARTER							
MAS	111	Bricklaying I	3	0		6	3
The history of the bricklaying industry. Clay and shell brick, mortar, laying foundations, laying bricks to a line, bonding, and tools and their uses. Laboratory work will be in practical application of bricklaying.							
MA	120A	Fundamentals of Math	3	0		0	3
Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.							
DD	120A	Building Trades Blueprint Reading and Sketching	3	0		0	3
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches.							

SECOND QUARTER

MAS 112 Bricklaying II 5 0 6 7

Designed to give the student practical applications of that information in mortar for walls, chimneys, foundations, expansion strips, wall ties, calking, cutting limestone, starting of bonds, construction of arches, cavity wall construction.

MA 120B Fundamentals of Math 2 0 0 2

A continuation of MA 120A.

**DD 120B Building Trades Blueprint
Reading and Sketching** 2 0 0 2

Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches.

THIRD QUARTER

MAS 113 General Masonry 4 0 6 6

Layout and erection of reinforced grouted brick masonry lintels, story pole and batter boards, fireplaces, glazed tile, panels, decorative stone, granite, marble, adhesive terra cotta and modular walls with modular windows.

MAS 114 Estimating 2 0 0 2

Estimating concrete walls, concrete floors, concrete stairs, concrete walks, septic tanks, wood lath and lathing, plaster, stucco, rubble stone, adhesive terra cotta and quantities of modular masonry units.

DD 126 Blueprint Reading for Masons 3 0 0 3

Designed to develop abilities in reading complex drawings in the masonry field. Blueprints of residence or of commercial buildings will be studied with emphasis on the plot floor, basement and/or foundation floor and various detailed drawings of masonry work.

PRACTICAL NURSE EDUCATION

INTRODUCTION

The aim of the Practical Nurse Education Program is to make available to qualified persons the opportunity to prepare for participation in care of patients of all ages, in various stages of dependency, and with a variety of illness conditions.

Students are selected on the basis of demonstrated aptitude for nursing as determined by pre-entrance tests, interviews with faculty members, high school record, character references, and reports of medical and dental examination.

Throughout the one-year program the student is expected to grow continuously in acquisition of knowledge and understandings related to nursing, the biological sciences, the social sciences and in the skills related to nursing practice, communications, interpersonal relations, and the use of good judgment. Evaluation of student performance consists of tests on all phases of course content, evaluation of clinical performance, and evaluation of adjustment to the responsibilities of nursing. A passing score is required on all graded work, plus demonstrated progress in the application of nursing skills to actual patient care.

Graduates of accredited programs of practical nurse education are eligible to take the licensing examination given by the North Carolina Board of Nurse Registration and Nursing Education, Enlarged. This examination is given twice each year, usually in April and September. A passing score entitles the individual to receive a license and to use the legal title "Licensed Practical Nurse." The license must be renewed annually. The Licensed Practical Nurse can apply for licensure in other states on the basis of a satisfactory examination score, without repeating the examination.

The LPN is prepared to function in a variety of situations: hospitals of all types, nursing homes, clinics, doctors' and dentists' offices and, in some localities, public health facilities. In all situations the LPN functions under the supervision of a registered nurse and/or licensed physician. This supervision may be minimal in situations where the patient's condition is stable and not complex; or it may consist of continuous direction in situations requiring the knowledge and skills of the registered nurse or physician. In the latter situation, the LPN may function in an assisting role in order

to avoid assuming responsibility beyond that for which the one-year program can prepare the individual.

Students wishing to take training at Banner Elk should apply to:

Mrs. Mary Louise Pritchett
Cannon Memorial Hospital
Banner Elk, North Carolina

Students wishing to take training at Lenoir should apply to:

Miss Louise Yount
Box 620 or Lenoir City Schools
Lenoir, North Carolina

PRACTICAL NURSE EDUCATION

PRACTICAL NURSING I: Fundamentals of Practical Nursing

OBJECTIVES: To offer the beginning student in practical nursing the opportunity to acquire basic knowledge from nursing and from related areas of learning and to begin to develop the skills needed for safe and effective bedside care of patients whose health deviation has created a state of dependency in matters of daily living.

COURSE MATERIAL: Nursing—History

Introduction to patient care
Administration of medicines

Health—Personal, physical and mental
Family
Community

Basic Science—Body structure and function
Bacteriology
Basic nutrition

Vocational Adjustments—Introduction to ethics
Introduction to legal aspects of nursing

Communications in Human Relations

Classroom activities are planned to assist the student in the development of knowledge, understanding, appreciations, and the attitudes basic to effective nursing of patients of all ages and backgrounds with nursing needs arising both from the individuality of the patient and from inability for self-care as a result of a health deviation. The student is encouraged to develop beginning skills in analysis of patient needs, both through classroom study of hypothetical patient situations and through planned patient experiences in the clinical environment. Beginning skills in nursing methods are developed through planned laboratory experiences, followed by related practice in actual patient care.

Clinical activities provide introduction to actual patient care through selected clinical assignments requiring the application of current classroom and laboratory learnings.

COURSE HOURS: This curriculum has been developed for a 360-hour teaching period.* It may be offered on a basis of 30 hours per five-day week, six hours daily, for 12 weeks.

PRACTICAL NURSING II: Care of Patients with Medical-Surgical Conditions

OBJECTIVES: To offer the practical nursing student opportunities to acquire the basic knowledge and understanding and to further develop the skills needed for rendering safe and effective nursing care to adolescent and adult patients with common illness conditions requiring medical and/or surgical treatment.

COURSE MATERIAL: Medical-Surgical Nursing—Patient Care
Diet therapy
Medications
Emergency and Disaster Nursing
Communications and Human Relations

Classroom activities center around analysis of nursing needs arising from the illness and/or surgical procedure, as viewed in perspective with the needs arising from the individuality of the patient. Related information is presented as it is relevant to the student's understanding of and ability to meet nursing needs of patients.

Clinical activities provide selected experiences in patient care in order for the student to develop skill in applying classroom learnings to a variety of patient situations.

COURSE HOURS: This curriculum has been developed for a 920-hour teaching period and may be offered on a basis of 4 hours per five-day week, eight hours daily, for 23 weeks. *The course must include 125 class hours and 20 weeks of clinical practice.

PREREQUISITE: Practical Nursing I.

PRACTICAL NURSING III: Care of the Maternity Patient and Newborn Infant

OBJECTIVES: To offer the practical nursing student opportunities to acquire basic knowledge of pregnancy, labor and delivery, the puerperium, and the neonatal period and to develop beginning skills in rendering safe and effective nursing care to maternity patients and newborn infants.

COURSE MATERIAL: Principles of Obstetrical Nursing
Nutrition in Pregnancy and Infancy
Medications
Communications and Human Relations

Classroom activities center around analysis of nursing needs of the antepartum and post-partum patients and the normal newborn infant. Basic knowledge of obstetrics and related areas is presented as it is relevant to the student's ability to function effectively in recognizing and meeting patient needs.

Clinical activities consist of guided experiences in nursing maternity patients and newborn infants and is planned to parallel classroom learnings.

COURSE HOURS: This curriculum has been developed for a 240-hour teaching period. It may be offered on a basis of 40 hours per five-day week, eight hours daily, for six weeks. *The course must include a minimum of 30 class hours and four weeks of clinical practice.

PREREQUISITE: Practical Nursing I.

PRACTICAL NURSING IV: Care of the Sick Child

OBJECTIVES: To offer the practical nursing student opportunities to acquire basic knowledge concerning the needs of normal, healthy children, the effects of illness on children, and the nursing needs of children of all ages with a variety of common illnesses and to develop beginning skills in recognizing and meeting the nursing needs of the hospitalized child.

COURSE MATERIAL: Growth and development
Principles from Pediatric Nursing
Medications
Nutrition and Diet therapy

Classroom activities center around the needs of children of all ages, the effects of illness on the needs of the child, and the nursing principles to be applied to the care of the sick child.

Clinical activities consist of guided experiences in the care of children with a variety of common illness conditions requiring medical and/or surgical treatment and is planned to parallel classroom learnings whenever possible.

COURSE HOURS: This curriculum has been developed for a 240-hour teaching period. It may be offered on a basis of 40 hours per five-day week, eight hours daily, for six weeks. *The course must include a minimum of 30 class hours and four to six weeks of clinical experience.

PREREQUISITE: Practical Nursing I.

PRACTICAL NURSING V: Vocational Adjustments for the Practical Nurse

OBJECTIVES: To offer the advanced practical nursing student opportunities to prepare for the transition from the student role to that of Graduate Practical Nurse.

COURSE MATERIAL: Vocational Adjustments—Nursing ethics
Legal aspects of nursing
Nursing organizations
Job Relations

Classroom activities center around experiences designed to promote appreciation for the attitudes and behaviors which will assist the student to adapt to the role of Graduate Practical Nurse and to the expectations of the employing agency.

COURSE HOURS: This curriculum has been developed for a 40-hour teaching period. The hours may be scheduled at the teacher's discretion during the last four weeks of the nursing program. *The course must include a minimum of 15 class hours.

PREREQUISITES: Practical Nursing I, II, III, and IV.

* Minimum hours required by the Nursing Board.

RADIO AND TELEVISION SERVICING

INTRODUCTION

Purpose of Curriculum

Within recent years improved electronic techniques have provided expanded entertainment and educational facilities in the form of monochrome and color television, frequency modulated radio, high fidelity amplifiers and stereophonic sound equipment. These developments require expanded knowledge and skill of the individual who would qualify as a competent and up-to-date serviceman.

This curriculum guide provides a training program which will provide the basic knowledge and skills involved in the installation, maintenance and servicing of radio, television and sound amplifier system. A large portion of time is spent in the laboratory verifying electronic principles and developing servicing techniques.

CURRICULUM BY QUARTERS

			COURSE TITLE		Course	Hours	Per	Week	Quarter
FIRST QUARTER					Class	Lab.		Shop	Hours
								Prac.	Credit
MA	125	Electrical Mathematics			5	0		0	5
ELEC	122	Direct and Alternating Current			7	8		3	12
ENG	101	Reading Improvement			2	0		0	2
					<hr/> 14	<hr/> 8		<hr/> 3	<hr/> 19
SECOND QUARTER									
ELN	122	Vacuum Tubes and Circuits			5	10		0	10
ELN	132	Amplifier Systems			2	0		6	4
ENG	102	Communication Skills			2	0		0	2
SOC	101	Human Relations			2	0		0	2
					<hr/> 11	<hr/> 10		<hr/> 6	<hr/> 18
THIRD QUARTER									
ELN	124	Vacuum Tubes and Circuits			4	4		0	6
ELN	125	Radio Receiver Servicing			2	0		6	4
ELN	126	Transistor Theory and Circuits			5	4		0	7
SOC	103	Management Procedures			3	0		0	3
					<hr/> 14	<hr/> 8		<hr/> 6	<hr/> 20

FOURTH QUARTER

ELN	127	Television Receiver Circuits and Servicing	10	0	15	15
	or		<u>10</u>	<u>0</u>	<u>15</u>	<u>15</u>
ELN	128	Television Receiver Circuits and Servicing	5	0	12	9
		Elective (1)	5	0	6	7
			<u>10</u>	<u>0</u>	<u>18</u>	<u>16</u>

ELECTIVE

ELN	129	Single Side-band Systems	5	0	6	7
ELN	130	Two-way Mobile Maintenance	5	0	6	7

COURSE DESCRIPTIONS BY QUARTERS

			COURSE TITLE	Course	Hours	Per Week	Quarter
FIRST QUARTER				Class	Lab.	Shop Prac.	Hours Credit
MA	125	Electrical	Mathematics	5	0	0	5

An introductory algebra course with trigonometry and vectors needed in alternating current: algebraic operations of addition, subtraction, multiplication and division; use of letters and signs, grouping, factoring; exponents, ratios and proportions; algebraic and graphic solutions of first-degree equations; introduction to trigonometric functions, their graphs and applications to right triangles. Addition, subtraction and resolution of vector quantities.

Prerequisite: None.

ELEC	122	Direct and Alternating Current	7	8	3	12
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A study of the structure of matter and the electron theory, the relationship between voltage, current and resistance in series, parallel and series-parallel circuits. Analysis of direct current circuits by Ohm's law and Kirchhoff's law; sources of direct current potentials. Fundamental concepts of alternating current flow; a study of reactance, impedance, phase angle, power and resonance and alternating current circuit analysis.

Prerequisite: None.

ENG	101	Reading Improvement	2	0	0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

SECOND QUARTER

ELN	122	Vacuum Tubes and Circuits	5	10	0	10
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An introduction to vacuum tubes and their development; the theory, characteristics and operation of vacuum diodes, semi-conductor diodes, rectifier circuits, filter circuits, triodes and simple voltage amplifier circuits.

Prerequisites: ELEC 122, MA 125.

ELN 123 Amplifier Systems**2 0 6 4**

An introduction of commonly used servicing techniques as applied to monophonic and stereophonic high fidelity amplifier systems and auxiliary equipment. The operation and servicing of inter-communication amplifiers and switching circuits will also be taught.

Prerequisites: MA 125, ELEC 122.

ENG 102 Communication Skills**2 0 0 2**

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

Prerequisite: None.

SOC 101 Human Relations**2 0 0 2**

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

THIRD QUARTER**ELN 124 Vacuum Tubes and Circuits****4 4 0 6**

A continuing study of tubes and circuits; the theory, characteristics, and operation of the tetrode and pentode tubes, voltage and power amplifiers, tunable RF amplifiers, oscillators and demodulator circuits.

Prerequisites: ELN 123, ELN 122.

ELN 125 Radio Receiver Servicing**2 0 6 4**

Principles of radio reception and practices of servicing; included are block diagrams of radio receivers, servicing techniques of AM and FM receivers by resistance measurements, signal injection, voltage analysis, oscilloscope methods of locating faulty stages and components and the alignment of AM and FM receivers.

Prerequisite: ELN 123, ELN 122.

ELN 126 Transistor Theory and Circuits**5 4 0 7**

Transistor theory, operation, characteristics and their application to audio and radio frequency amplifier and oscillator circuits.

Prerequisite: ELN 123.

SOC 103 Management Procedures**3 0 0 3**

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

Prerequisite: None.

FOURTH QUARTER

ELN 127 Television Receiver Circuits and Servicing	10	0	15	15
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A study of principles of television receivers, alignment of radio and intermediate frequency amplifiers, adjustment of horizontal and vertical sweep circuits will be taught. Techniques of troubleshooting and repair of TV receivers with the proper use of associated test equipment will be stressed. Additional study of more specialized servicing techniques and oscilloscope waveform analysis will be used in the adjustment, troubleshooting and repair of the color television circuits.

Prerequisites: ELN 126, ELN 125.

ELN 128 Television Receiver Circuits and Servicing	5	0	12	9
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This course, taught in conjunction with an elective, will be a shortened version of ELN 127.

Prerequisites: ELN 126, ELN 125.

ELECTIVE:

ELN 129 Single Side-band Systems	5	0	6	7
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An introductory course of single side-band transmission system with carrier frequency or without and the associated balanced modulator of phasing system used to produce this type of transmission. Time will be allotted also to the necessary circuitry in the receiver to receive this type transmission.

Prerequisites: ELN 126, ELN 125.

ELN 130 Two-way Mobile Maintenance	5	0	6	7
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A course to acquaint the student with the theory and maintenance of fixed station and mobile station transmitters and receivers. Except for radio laws, sufficient information will be given to qualify the student to take the FCC second class radio-telephone license examination.

Prerequisites: ELN 126, ELN 125.

ENGINEERING AND TECHNICAL SECRETARY

The Engineering and Technical Secretary Curriculum is designed to prepare a student for a position in the office of a firm dealing in research, development, and production in the scientific fields. The curriculum offers students the necessary secretarial skills and the required background of understanding and appreciation of the scientific method, the beginnings of a technical vocabulary, and a feeling of respect for accuracy that will be essential in later work in the field.

Graduates of this program will be in demand where engineers, as well as other technical personnel, find a need for secretarial help who can understand the specialized language of Electrical, Mechanical, Civil, or Chemical Engineers. Graduates of this program, since they have received a background of scientific and engineering terminology in addition to their business background, are admirably prepared to work with engineering reports, records, and correspondence.

CURRICULUM BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
			Class	Lab.		Shop Prac.	Hours Credit
FIRST QUARTER							
BUS	111	Statistical Typing	1	4		0	3
BUS	113	Technical Dictation	1	4		0	3
ENG	102	Communication Skills	3	0		0	3
BUS	115	Business Machines	3	2		0	4
MATH	112	Business Mathematics	5	0		0	5
BUS	117	Accounting I	2	2		0	3
ENG	301	Reading Improvement	2	0		0	2
			17	12		0	23
SECOND QUARTER							
SOC	101	Human Relations	2	0		0	2
BUS	112	Statistical Typing	1	4		0	3
BUS	114	Technical Dictation	3	2		0	4
BUS	116	Business Machines	3	2		0	4
BUS	118	Accounting II	2	2		0	3
PHY	104	Applied Physics I	1	2		0	2
MATH	124	Algebra	5	0		0	5
			17	12		0	23

ISc	102	Industrial Organizations	3	0	0	3
ENG	103	Report Writing	2	0	0	2
DD	118	Drafting	2	0	3	3
BUS	120	Office Procedures	2	2	0	3
PHY	105	Applied Physics II	1	2	0	2
ISc	110	Industrial Processes I	3	2	0	4
BUS	119	Accounting III	2	2	0	3
BUS	121	Data Processing Machines I	2	0	0	2
			<u>17</u>	<u>8</u>	<u>3</u>	<u>22</u>

ISc	112	Technical Illustrations	1	4	0	3
PHY	106	Applied Physics III	1	2	0	2
SOC	105	Industrial Economics	3	0	0	3
ISc	111	Industrial Processes II	3	2	0	4
BUS	125	Industrial Research	1	4	0	3
BUS	122	Data Processing Machines II	2	0	0	2
BUS	123	Business Law	3	0	0	3
			<u>14</u>	<u>12</u>	<u>0</u>	<u>20</u>

COURSE TITLE		Course	Hours	Per Week	Shop	Quarter
FIRST QUARTER		Class	Lab.	Prac.	Hours	Credit
BUS 111 Statistical Typing		1	4	0	3	
Instruction in this course emphasizes the development of speed and accuracy, with further mastery of correct typewriting techniques. Remedial instruction is given for the correction of individual difficulties. Both electric and manual typewriters are used.						
Prerequisite: Entrance requirement.						
BUS 113 Technical Dictation		1	4	0	3	
Development of shorthand power through sustained dictation at high speed. Additional work in specialized phrasing and shortcuts is included. Emphasis is placed on training the student for stenographic work on a production basis. Consideration is also given to appreciation of office problems, up-to-date business procedures, and the development of initiative and independent thinking.						
Prerequisite: Entrance requirement.						
ENG 102 Communication Skills		3	0	0	3	
Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.						
Prerequisite: None.						
BUS 115 Business Machines		3	2	0	4	
Students will become familiar with various office machines associated with secretarial duties. Instruction will include the care, use, and practice on full keyboard, adding and listing machines, ten key adding and listing machines, rotary calculators, key driven calculators, fluid process duplicators, bookkeeping machines, mimeograph, dic-						

tating and transcribing machines, and telephone. Established procedures, practices and standards found in modern business offices are emphasized throughout the course.

MA 112 Business Mathematics 5 0 0 5

Mathematical operations and their applications to business: payrolls, price marking; simple and compound interest, discount; commission; inventory; insurance; taxes; and other mathematics in business.

Prerequisite: None.

BUS 117 Accounting I 2 2 0 3

An introduction to the elements of accounting and general accounting principles is integrated with practice in the use of special journals, with respect to single proprietorship, merchandising inventory and sales, accounting for cash, banking procedures, payroll accounting, and accounting for a retail store.

Prerequisite: None.

ENG 301 Reading Improvement 2 0 0 2

Instruction is given in techniques for improving speed and comprehension in reading. A brief analysis of the student's rate of reading is made on the basis of reading tests. Special projectors and instruments designed to aid in increasing speed and comprehension and visual span are used. Emphasis is placed on improving speed of reading and comprehension of technical material.

Prerequisite: None.

SECOND QUARTER

SOC 101 Human Relations 2 0 0 2

The purpose of the course is to help the student acquire greater understanding of his relations to other persons through learning and applying some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

BUS 112 Statistical Typing 1 4 0 3

Emphasis in this course is placed on the development of individual production rates and the techniques in planning and in typing projects that closely approximate the work in an engineering office. These projects include statistical tabulation, typing on printed forms, reports, manuscripts and legal documents.

Prerequisite: BUS 111.

BUS 114 Technical Dictation 3 2 0 4

Terminology in the fields of science and technology are introduced in this specialized course. Through dictation and transcription of subject matter related to the engineering field, accuracy, speed and vocabulary are developed to meet the stenographic requirements of technical organizations.

Prerequisite: BUS 113.

BUS 116 Business Machines	3	2	0	4
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This is a continuation of BUS 115 Business Machines with additional practice on machines available at the particular institution.

Prerequisite: BUS 115.

BUS 118 Accounting II	2	2	0	3
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A detailed study of the periodic summary, work sheet, trial balance, adjustments and closing procedures at the end of an accounting period. An opportunity to apply all accounting principles and procedures of a sole proprietorship through the use of a practice set.

Prerequisite: BUS 117.

PHY 104 Applied Physics I	1	2	0	2
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Introductory physics and its applications. Systems of measurement, theory of matter, properties of solids, liquids, and gases.

Prerequisite: None.

MA 124 Algebra	5	0	0	5
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Basic concepts and operations of algebra: historical background of our base-10 number system; algebraic operations: addition, subtraction, multiplication and division; fractions, letter representation, grouping, factoring, ratio and proportions, variation; graphical and algebraic solution of first degree equations; solution of simultaneous equations by: addition and subtraction, substitution, graphing; exponents, logarithms, tables and interpolation.

Prerequisite: None.

THIRD QUARTER

ISc 102 Industrial Organizations	3	0	0	3
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Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost.

Prerequisite: None.

ENG 103 Report Writing	2	0	0	2
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Brief review of English grammar, spelling, and punctuation. Concentrated effort will be applied to the fundamentals of good writing; sentence structure, proper development of descriptive reporting, and the mechanics of report construction. Practice in writing letters and various report forms will be given and some time will be devoted to oral speech and note taking.

Prerequisite: None.

DD 118 Drafting	2	0	3	3
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An introductory course in drafting and the principles of orthographic drawing. Lettering, applied geometry, orthographic principal views, dimensioning and orthographic reading will constitute the major part of the instruction. Drawing tools will be used in making orthographic drawings.

Prerequisite: None.

BUS 120 Office Procedures**2 2 0 3**

This course is designed to acquaint the student with the responsibilities encountered by a secretary during the workday. Through simulated office practices a review is given of the following areas of work: writing; receiving callers; making appointments; taking dictation and transcribing; typing research papers; and telephone technique. A portion of this course will be devoted to filing systems and techniques. Topics to be covered will be: indexing and filing rules; correspondence filing; alphabetic filing; numerical filing; triple check automatic filing; cross reference; geographic filing; subject filing; filing equipment and microfilming.

Prerequisites: BUS 112, BUS 114.

PHY 105 Applied Physics II**1 2 0 2**

Basic principles of electricity, types of electricity, and its production, transmission, and transformation. Such factors as the electron theory, electrical measurement, magnetism, electromagnetism, and the magnetic effects of electricity constitute major areas of study.

ISc 110 Industrial Processes I**3 2 0 4**

A general survey of the basic principles and concepts of mechanics, electricity and chemistry. An acquaintance with basic handbooks and periodicals associated with technical areas such as electronics-electrical, drafting, furniture, textiles and printing. Lectures, demonstrations, and laboratory projects are used to provide a foundation for understanding the technician's and engineer's activities and for developing a knowledge of technical terminology.

Prerequisite: None.

BUS 119 Accounting III**2 2 0 3**

Sole proprietorship, partnership, and corporation accounting; accounting for notes and drafts, for purchases, for sales, for inventory, for supplies and prepayments, and for tangible fixed assets. Emphasis is given to problem solving and on the preparation and interpretation of forms and reports used by accountants.

Prerequisite: BUS 118.

BUS 121 Data Processing Machines I**2 0 0 2**

An introduction to the field of Data Processing, acquainting students with the techniques utilized in the operation of punch card equipment. The course includes discussions on application studies, procedure development, code methods, card design, and the functional principles of each basic machine employed in this method of accounting.

FOURTH QUARTER**ISc 112 Technical Illustrations****1 4 0 3**

The student will prepare charts and graphs for visual presentations and reproduction in technical publications. Sample layouts, using prepared art work; lettering and outline templates; and adhesive backed tapes will be made. The student will work with various media and will utilize office copying machines, blueprint machines, overhead projectors, and transparency materials. A practical course on the proper use of visual aids and visual presentations.

Prerequisite: DD 118.

PHY 106 Applied Physics III 1 2 0 2

Physical principles of force, energy, work and power; equilibrium and the laws of motion; the principles of machines, mechanical advantage, and transmission of power in practical application and the use of vectors, and graphical presentations.

Prerequisite: PHY 104.

SOC 105 Industrial Economics 3 0 0 3

A course designed to help the student understand present day economic problems. Topics include: production, consumption, exchange and distribution, money and credit, business fluctuations, labor and management relations, and challenges to our system of free enterprise.

Prerequisite: None.

ISc 111 Industrial Processes II 3 2 0 4

An acquaintance with the use in industry of metals, woods, plastics, rubber, textiles, paper, stone, clay, glass and chemicals. Familiarization with tools, machines, processes used to produce machines, appliances, furniture, textile and printed material. Consideration is given to job shop and production line techniques. Emphasis throughout the course is on trade and technical terms and a knowledge of what is done in the production areas of industrial enterprises. Lectures, demonstrations, laboratory work, and plant visitations are used.

Prerequisite: ISc 110.

BUS 125 Industrial Research 1 4 0 3

Individual assignments in a carefully selected project will be made to the student during this quarter of work. It will give the student an opportunity to initiate and carry out a project taken from outside the school. This course places the responsibility upon the student to solve a significant problem with minimum of teacher assistance. A large portion of the student's time will be spent in the technical library obtaining information and data necessary to complete the written report necessary for the completion of the project.

Prerequisite: Satisfactory completion of courses in the first through third quarter of Engineering and Technical Secretary Curriculum.

BUS 122 Data Processing Machines II 2 0 0 2

A continuation of BUS 121.

BUS 123 Business Law 3 0 0 3

An introduction to law as applied to business operations with emphasis on forms and terminology. Such items as contracts, sales documents, and negotiable instruments are covered. A familiarization with such economic legislation as workmen's compensation, basic tax laws, and social security legislation is included.

SEWING (Furniture Fabric)

In this course the student has an opportunity to learn to operate the sewing machine, to sew material in order to have proper fitting of patterns and to match fabrics. The purpose is to learn the fundamentals of sewing operations so that speed and production may be attained. The length of the course is 2 quarters.

The student will learn the following:

1. Basic knowledge of the sewing machine
 - a. How to thread a machine
 - b. How and when to change stitches
 - c. How to change needles
 - d. How and when to adjust tension
2. Understanding pieces to be sewn
 - a. Understanding cutter's marks
 - b. Where and why to sew pulls
 - c. Where and why to sew welts
 - d. How to sew welts
 - e. How to French seam (top stitch)
 - f. How to match stripes
3. Sewing the loose cushion
 - a. Learning the importance of exact seaming
 - b. How to apply boxing to face of cushion to sew
 - c. How to join boxing
 - d. How to match stripes on boxing and face
 - e. How to finish cushion
4. Sewing skirts—Flounces
 - a. Learning to sew box-pleat skirt
 - b. Learning to line box-pleat skirt
 - c. Learning to sew flounces

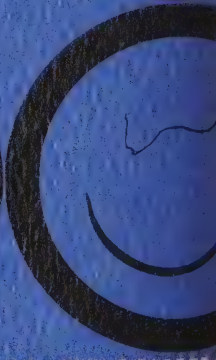
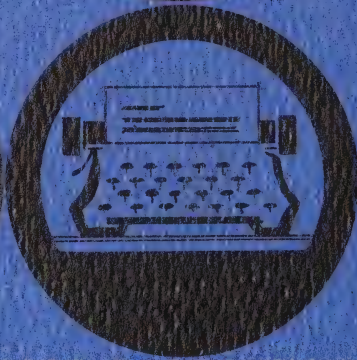
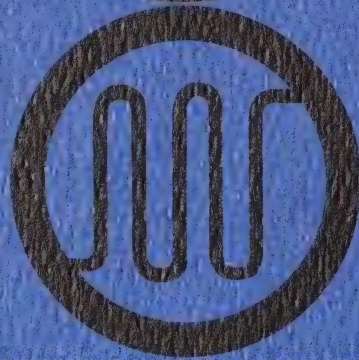
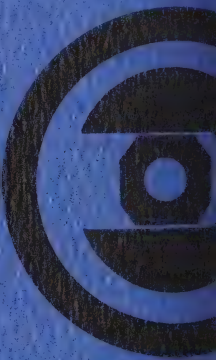
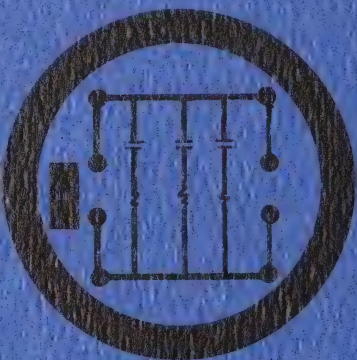
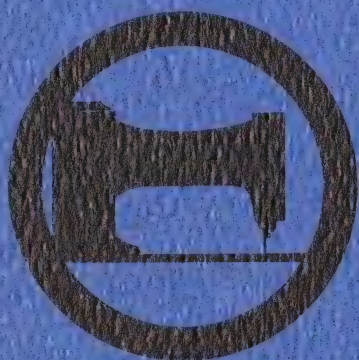
UPHOLSTERY

This course runs 3 quarters and is set up to give the student an opportunity to learn the skills involved in upholstery. The course covers various styles and types of furniture and gives practical experience in the construction, springing up and period of history of the frame to be upholstered.

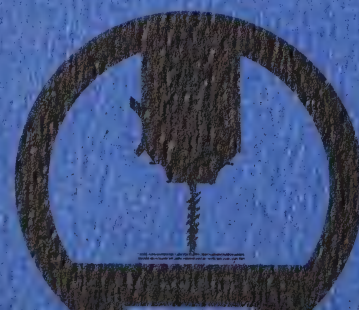
The student will learn to do the following:

1. Spit tacks—hammer technique
2. Arrange and secure filler and padding
 - a. Sewing large stitches across surface of fabric covering of springs and working filler under stitches to form holding base.
 - b. Spreading more filler over surface and placing cover filler, sewing it to bottom fabric.
 - c. Placing additional filler on top of cover and covering padded sections with unbleached muslin, tacking muslin to frame.
 - d. Arranging layer of cotton wadding over muslin cover for smoother finish.
3. Cover padded frame with upholstery fabric
 - a. Selecting previously cut fabric, partially stitched, and aligning and smoothing it in place over cotton wadding.
 - b. Tacking cover to form in key spots to hold it temporarily.
 - c. Sewing sections of cover which have been left unstitched with invisible lockstitches.
 - d. Strengthening and tacking edges of cover tightly and evenly to frame.
 - e. Untacking covering in places and inserting regulator to smooth out lumpy padding, then permanently tacking.
 - f. Trimming covering around legs and uprights to make a neat fit.

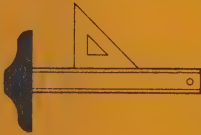
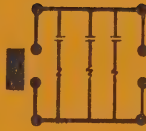
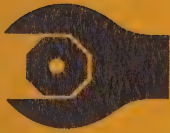
- g. Tacking or gluing gimp over seams to cover rough edges and tack heads.
 - h. Sewing or tacking on ornamental braid, buttons, or tassels.
4. Making and tying buttons
 5. History of furniture, periods
 6. Tools and equipment
 7. Springing up
 8. Body Work
 9. Stuffing
 10. Covers
 11. Tufting and buttoning



"TECHNICAL OR TRADE OCCUPATIONAL TRAINING"



ATAWBA VALLEY TECHNICAL INSTITUTE



CATAWBA VALLEY TECHNICAL INSTITUTE

HWY. 64-70-321

Midway—Newton and Hickory

**CATALOGUE OF COURSES
DAY AND EVENING SCHOOL**

VOLUME V

1965 - 1966

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ACADEMIC CALENDAR

1965-66

FALL QUARTER

Registration	September 7-8
Day Classes Begin	September 9
Night Classes Begin	September 9
Last Day for Registration	September 15
End of Fall Quarter	November 24
Thanksgiving Holidays	November 25-26

WINTER QUARTER

Registration	November 30, December 1
Day Classes Begin	December 2
Night Classes Begin	December 2
Last Day for Registration	December 8
Christmas Holidays	December 24-January 2
Resume Classes	January 3
End of Winter Quarter	February 25

SPRING QUARTER

Registration	March 2-3
Day Classes Begin	March 7
Night Classes Begin	March 7
Last Day for Registration	March 13
Easter Holidays	Good Friday-Easter Monday
End of Spring Quarter	May 25

SUMMER QUARTER

Registration	June 2-3
Day Classes Begin	June 6
Night Classes Begin	June 6
Last Day for Registration	June 12
End of Summer Quarter	August 19

ADMINISTRATION

BOARD OF TRUSTEES

Harry M. Arndt, Chairman

Adrian Shuford, Vice-Chairman

Ralph Bowman

Charles Groves

Cyril Long Mebane

Dr. James Price

Dr. Ira Bell

Walker Geitner

Frank M. Little

Hubert Gilbert

Ben Brooks

Ray Morrow

ADMINISTRATIVE STAFF

Robert E. Paap.....President

Marcus B. Simpson.....Director, Technical and Vocational Program

Bruce B. Bishop.....Director of Student Personnel

Ervin Lineberger.....Student Counselor

William D. Killian.....Director of Evening Program

Thomas W. Jameson.....Director of Extension Services

Judy Rogers.....Secretary to President

Elizabeth Robinson.....Bookkeeper

Reita Lackey.....Student Services Secretary

Linda Sigmon.....Secretary

FOREWORD

Catawba Valley Technical Institute is a state-county supported institution which accepts both men and women for enrollment. The C.V.T.I. seeks to make available to each student that type of education which will best provide for professional competence in the field of his major interest. Educational areas within the province of the C.V.T.I. are: Technical and Technical Specialization fields, occupational training in Trade areas, Health Service areas, Adult Education programs and special extension programs.

The complex society in which we live today is remarkably sensitive to the rapid advances in science, technology, and occupational training. In such a world, professional competence is of prime importance. If students are to take their places as fully contributing members of society, technical knowledge alone is not sufficient. They must also develop an awareness and understanding of the historical and cultural heritage of the nation and present-day problems in realms of sociology, economics, business, and government.

Catawba Valley Technical Institute recognized this concept as one of the basic aims of education by accepting responsibility for preparing young men and women to meet successfully the challenge of our changing society. To this aim, each program provides the opportunity to obtain a sound education and a proper basis for specialization.

Robert E. Paap, President

AREAS OF STUDY

TECHNICAL DIVISION

Courses offered in the Technical Division are designed to meet the increasing demand by industry for high level industrial skills. The technician is a person whose chief interests and activities lie in the direction of testing, developing, and applying the operation of engineering and scientific processes. He will be exposed in such activities as drafting, design, installation and operation of equipment, estimating, and sales. The technical curricula requires two years for completion. The technical curricula are similar to professional engineering curricula but briefer and more technical in content.

Students choosing to enter a technical course must meet educational and aptitude requirements applicable to the individual course of their choosing. Students must have a well founded educational background in mathematics and science and possess adult maturity with a general aptitude for this advanced type of training.

Students who successfully complete courses in this division will be prepared to offer prospective employers the skills and education necessary to work as an industrial technician. In order for the applicant to get full benefit of technical courses, it is recommended that he be enrolled for the full-time program.

TRADE DIVISION

In an ever changing world of engineering and technologies, one must not lose sight of the ever growing need for skilled craftsmen. Catawba Valley Technical Institute offers a series of training courses in the trade division with emphasis on manipulative and mental skills applicable to a particular course for which a student is enrolled. Trade courses require one full year of participation for students on a full-time basis. Applicants for the trade division will therefore be urged to enroll for a full-time program.

EXTENDED DAY DIVISION

An Extended Day Division provides an opportunity for working men and women to pursue a technical or trade course of their choosing in the evening.

Included in this division are short term courses designed to meet specific needs in the areas of upgrading and updating of current

occupations. Also included in this division are management and supervisory level courses designed to meet the needs of those individuals who desire to advance in specific fields of management. Special classes, both day and night, may be offered to accommodate such students.

ADMINISTRATIVE PROCEDURES

GENERAL REQUIREMENTS

The Catawba Valley Technical Institute is a co-educational institution and any North Carolina citizen may enroll in a course provided he meets educational requirements. Requirements will vary depending upon the division in which an applicant seeks training and the particular course desired.

All applicants must be eighteen years of age or older or a high school graduate and must possess certain attitudes, aptitudes, and interests. No applicant may enroll in more than one curriculum at any given time.

An applicant should be in reasonably good health with no impairments or physical defects that would effect his ability to achieve in a particular field of work. Applicants in certain instances may be required to furnish evidence of satisfactory health.

Applicants desiring to pursue a course in the technical division must be high school graduates or equivalent. Technical level students must have completed two years of high school mathematics, preferably one year of algebra and one year of geometry. Physics and chemistry are also desirable prerequisites for students pursuing a course in the technical division.

ADMISSION PROCEDURE

Persons wishing to pursue courses at the Catawba Valley Technical Institute must secure an application for admission. Application forms may be obtained in person or by writing or calling the Catawba Valley Technical Institute located midway between Hickory and Newton on Highway 64-70-321. Telephone Numbers: Hickory—327-9124, Newton—464,4106.

Application for a given course may be made at any time preceding the enrollment date of courses. It is strongly recommended that this be done at least thirty days prior to the beginning of each quarter. Such time is required for the necessary testing, counseling and the proper evaluation of results.

All applicants desiring to pursue a technical or trade course will be required to take the General Aptitude Test Battery administered by the Employment Security Commission. Under special conditions, equivalent examinations may be given by the Catawba Valley Technical Institute at their discretion.

Applicants will be required to complete the following steps:

1. Make application
2. At time of application, deposit a \$2.00 registration fee
3. Submit a transcript of high school records
4. Complete GATB tests
5. Arrange for an interview with Catawba Valley Technical Institute Director of Student Services

Upon completion of the preceding steps, each application will be evaluated. Notification of acceptance will be made within two weeks after the above requirements have been completed. No application will be considered complete until all required information has been submitted to the Director of Student Services.

TRANSFER STUDENTS

The Catawba Valley Technical Institute will accept work and give credit for work completed in other Industrial Education Centers, Technical Institutes, and Colleges. Transfer students will be required to make formal application and submit transcripts of previous work which will be evaluated. Final acceptance of transfer credit will be at the discretion of the President.

FEES

Registration Fee\$ 2.00

Tuition Fee:

Full-time students (per quarter) 30.00

Part-time students (per credit hour) 2.00

In addition to the above charges, students must buy the textbooks prescribed in various areas, and at graduation must pay a cap and gown fee and a diploma fee.

REFUNDS

Under no circumstances will the \$2.00 Registration Fee be refunded. Tuition refunds for full-time students shall not be made unless the student is compelled to withdraw for unavoidable reasons. In such cases, \$20.00 may be refunded (full-time students) if the student withdraws within 20 days after the beginning of the term. No refund may be given after 20 days.

WITHDRAWALS

Students who must withdraw passing, because of illness or personal hardships, may re-enter the course as a beginning student provided that such re-entry is taken upon the next immediate offering.

Students may be dismissed from school for failure to maintain passing grades and for infraction of rules and regulations that apply to student conduct. Any student who has been dismissed may re-enter after an interval of one year on a probationary basis. Students desiring to withdraw in good standing should first notify their major instructor, and secondly make formal withdrawal with the Director of Student Services.

GRADING SYSTEM

Grades will be issued to all students at the end of each quarter. Students enrolled in either the technical division or the trade division will be graded by the following numerical system:

93-100	Excellent
86-92	Above Average
78-85	Average
70-77	Passing
Below 70	Failing
WP	Withdrawn Passing
WF	Withdrawn Failing
I	Incomplete

ATTENDANCE

All students will be expected to attend prescribed classes according to their prearranged schedule. Only excused absences will be permitted. Unexcused absences will be marked as "0" for daily work. Three consecutive absences will subject a student to dismissal. An accumulation of unexcused absences will also subject a student to dismissal.

STUDENT CONDUCT

Students will be expected to conduct themselves at all times as mature adults. Students who do not respect the rights and privileges of other students and fail to demonstrate a high regard for school facilities, property, and personal property of others will be subjected to dismissal.

STUDENT SERVICES

COUNSELING AND TESTING

The Institute conducts a service of counseling and guidance for the benefit of students enrolled at the Institute and for applicants desiring professional assistance in the selection of a program of learning. Students who are having difficulties with grades or personal problems should seek counsel with the Director of Student Services.

The Director of Student Services is specially trained to assist in personal counseling, study habits, and interpreting rules and regulations pertaining to the Institute. He will be your friend while attending the Institute.

LIBRARY

It has been said that an institution is only as strong as its library. It is through this belief that the Institute has maintained a vigilance and unflinching effort in the continual development of its library facilities. A technical library is maintained by the Catawba Valley Technical Institute for use by faculty and students. The library contains publications on engineering, technical, and trade levels. The library service is open to all students participating in the various divisions of the Institute.

PLACEMENT SERVICE

The Institute provides a placement service by working with the Employment Security Commission which will assist the students and alumni in seeking employment. Industries that conduct their own recruitment program will be granted permission to interview students upon request.

STUDENT HOUSING

The Institute does not maintain living quarters for students from outlying areas, but it will be the policy of the school to assist students in acquiring adequate rooming facilities when requested.

STUDENT LOUNGE

A refreshment lounge equipped with a variety of vending machines is provided for the convenience of students and faculty.

STUDENT SCHOLARSHIPS AND LOANS

Student assistance in the form of scholarships and loans is available to students who are residents of North Carolina and who can show a definite need for financial assistance. Twelve scholarships are available to the students who desire to pursue a program for Knitting Machine Fixing.

Through the State of North Carolina, students may secure loans up to \$300 per year if enrolled on a full-time basis. Loans are to be repaid over a period of five years beginning one year after graduation, interest to be calculated at 3½%.

Additional scholarships and loans may be available from local industry or CVTI.

All persons interested in securing financial assistance or becoming eligible for a scholarship should contact the Director of Student Personnel.

GRADUATION REQUIREMENTS

Upon successful completion of a prescribed course at the Institute, students will be allowed to graduate. Successful completion means all grades must be passing or better. Students who fail individual subjects will be required to make up such deficiencies before being allowed to graduate.

ASSOCIATE DEGREE IN APPLIED SCIENCE

The associate degree in applied science will be awarded to those completing a technology curriculum.

DIPLOMA

Diplomas will be awarded those finishing a trade curriculum.

CERTIFICATES

Certificates of completion will be granted all students successfully completing all short-term classes.

STUDENT ACTIVITIES

To create an environment conducive to student interest and happiness and to provide opportunities for individual growth, CVTI supports a variety of activities to supplement the academic program.

Among these activities are: the student government, the yearbook, **CATVATECHI**; the student newspaper, semi-annual dances; and athletics, such as basketball, bowling, and possibly softball. The variety and number of student programs is expected to grow rapidly during the next several years.

CATAWBA VALLEY TECHNICAL INSTITUTE

TECHNICAL DIVISION PROGRAMS OF STUDY

Agricultural Business Technology	—6 qtrs.
Air-Conditioning & Refrigeration Technology	—6 qtrs.
Business Technology	
Business Administration	—6 qtrs.
Accounting	—6 qtrs.
Traffic and Transportation	—6 qtrs.
Drafting and Design Technology	
Architectural	—6 qtrs.
Furniture	—6 qtrs.
Mechanical	—6 qtrs.
Electronics Technology	—6 qtrs.
Secretarial Technology	
Executive Secretary	—6 qtrs.
Engineering and Technical Secretary	—6 qtrs.
Legal Secretary	—6 qtrs.
Medical Secretary	—6 qtrs.

AGRICULTURAL TECHNOLOGY—BUSINESS

INTRODUCTION

Purpose of Curriculum

Rapid technological changes in farming and related agricultural businesses have given rise to the need for more technically trained people. A variety of agricultural businesses and industries employ persons to assist in marketing, processing, and distributing of farm products and providing services to the farmer. Many responsible positions in agricultural businesses and industries require technical training not available in high schools or in four-year colleges.

The Agricultural Technology-Business Curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business. It combines knowledge of agriculture with business training to prepare the graduate for one of the many varied employment opportunities in agricultural business. The specific objectives of the Agricultural Business Curriculum are to develop the following student competencies:

1. Understanding of the principles of organization and management in agricultural businesses, industries and farm operations.
2. Understanding of the basic principles of our economic system, marketing, credit, price concepts and governmental policies and programs relating to agriculture.
3. Understandings and skill in effective communication for agricultural business.

SUGGESTED CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week	Hours Lab.	Quarter Hours Credit
FIRST QUARTER					
ENG	302	Communicative Skills: English	3	0	3
BUS	301	Introduction to Business	3	0	3
BUS	317	Sales Development	3	0	3
MA	310	Business Mathematics	3	0	3
AG	370	Animal Science	5	2	6
			17	2	18
SECOND QUARTER					
AG	490	Soil Science and Fertilizers	5	2	6
ENG	305	Communicative Skills: Report Writing	3	0	3
BUS	320	Accounting	5	2	6
AG	310	Introduction to Agricultural Economics	3	2	4
			16	6	19

THIRD QUARTER

BUS	355	Interpreting Accounting Records	3	0	3
BUS	360	Office Machines	2	2	3
AG	312	Agricultural Marketing	5	2	6
AG	420	Plant Science	5	2	6
			15	6	18

FOURTH QUARTER

BUS	364	Business Finance	3	0	3
BUS	366	Budget and Record Keeping	3	0	3
AG	314	Farm Business Management	5	2	6
AG	326	Agricultural Programs and Agencies	3	2	4
Elective**			—	—	3
			14	4	19

FIFTH QUARTER

ENG	304	Communicative Skills: Speech	2	0	2
SOC	310	Applied Psychology	3	0	3
AG	322	Agricultural Prices	3	0	3
AG	306	Farm Chemicals	5	2	6
Elective**			—	—	3
			13	2	17

SIXTH QUARTER

BUS	368	Taxes	3	0	3
BUS	372	Principles of Supervision	3	0	3
AG	380	Livestock Diseases and Parasites	3	2	4
AG	342	Farm Mechanization	3	2	4
Elective**			—	—	3
			12	4	17

** Elective courses must be selected from the associate degree curriculum. Six hours of the electives should be in agriculture. Local institutions may add work experience to this curriculum.

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE	Course Hours		Quarter Hours Credit
	Class	Per Week Lab.	

FIRST QUARTER

ENG 302 Communicative Skills: English	3	0	3
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Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

BUS 301 Introduction to Business	3	0	3
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A survey of the business world with particular attention devoted to the structure

of the various types of business organizations, methods of financing, internal organization, and management.

Prerequisite: None.

BUS 317 Sales Development 3 0 3

A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required.

Prerequisite: None.

MA 310 Business Mathematics 3 0 3

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business.

Prerequisite: None.

AG 370 Animal Science 5 2 6

An introductory animal science course covering the fundamental principles of livestock production. A study of the animal body and the basic principles of reproduction, genetics, growth, fattening, digestion, along with the selection, feeding, improvement, processing and marketing of livestock.

Prerequisite: None.

SECOND QUARTER

AG 490 Soil Science and Fertilizers 5 2 6

Soil types: basic principles of efficient management of soils and the growing of crops; care and cultivation of the soil, fertilization and conservation of soil fertility.

Prerequisite: None.

ENG 305 Communicative Skills: Report Writing 3 0 3

A study and practice in the fundamentals of report writing, including style and mechanics in preparing reports of various types, which are most likely to be used by people engaged in business and the professions.

Prerequisite: ENG 302.

BUS 320 Accounting 5 2 6

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned.

Prerequisite: MA 310.

AG 310 Introduction to Agricultural Economics 3 2 4

An introduction to economics, the functions of the economic system and agriculture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main sources of change which affect agricultural firms.

Prerequisite: None.

THIRD QUARTER

BUS 355 Interpreting Accounting Records 3 0 3

Designed to aid the student in developing a "use understanding" of accounting records, reports and financial statements. Interpretation, analysis, and utilization of accounting statements.

Prerequisite: BUS 320.

BUS 360 Office Machines 2 2 3

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the ten-key adding machines, full keyboard adding machines, calculator, and duplicating equipment.

Prerequisite: None.

AG 312 Agricultural Marketing 5 2 6

An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco.

Prerequisite: AG 310.

AG 420 Plant Science 5 2 6

An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions, and development of seed bearing plants with application to certain commercially important plants in North Carolina.

Prerequisite: None.

FOURTH QUARTER

BUS 364 Business Finance 3 0 3

Financing of business units, as individuals, partnerships, corporations, and trusts. A detailed study is made of the organization, management, and financing of businesses.

Prerequisite: None.

BUS 366 Budget and Record Keeping 3 0 3

The basic principles, methods, and procedures for preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning.

Prerequisite: BUS 320.

AG 314 Farm Business Management 5 2 6

A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most net revenue.

Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager.

Prerequisite: AG 310.

AG 326 Agricultural Programs and Agencies 3 2 4

A review of the public agriculture programs and agencies that provide services for agricultural producers. The objectives, organization, functions and services of these organizations.

Prerequisite: AG 310.

FIFTH QUARTER

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

SOC 310 Applied Psychology 3 0 3

This course stresses the procedures of building an efficient, enthusiastic business team and deals with the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority.

Prerequisite: None.

AG 322 Agricultural Prices 3 0 3

An introduction to the functions of prices in our economic system and the effects of changing price levels. The influence consumer demand has on prices through price and income elasticities. A review of the influence of cycles and timing of production along with an examination of the use of future commodity contracts. Application of the principles of price analysis to price control and parity programs. Familiarization with the various tools widely used in historical analysis and forecasting.

Prerequisite: None.

AG 306 Farm Chemicals 5 2 6

A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control.

Prerequisite: None.

SIXTH QUARTER

BUS 368 Taxes 3 0 3

Application of Federal and State taxes to various businesses and business conditions. A study of the following taxes: income, payroll, intangible, capital gain, sales

and use, excise, and inheritance.

Prerequisite: None.

BUS 372 Principles of Supervision 3 0 3

Introduces the basic responsibilities and duties of the supervisor and his relationship to superiors, subordinates, and associates. Emphasis on securing an effective work force and the role of the supervisor. Methods of supervision are stressed.

Prerequisite: None.

AG 380 Livestock Diseases and Parasites 3 2 4

A course in animal health with emphasis on livestock sanitation practices and procedures and management factors relating to disease and parasite prevention. The cause, damage, symptoms, and treatment of the most prevalent livestock diseases and parasites in North Carolina.

Prerequisite: None.

AG 342 Farm Mechanization 3 2 4

A study of farm machinery management and labor-saving devices. The economics of selection and operation of farm machinery. Study and evaluation feed grinders and mixers, storage facilities, materials handling systems and other labor-saving devices.

Prerequisite: None.

AIR CONDITIONING AND REFRIGERATION TECHNOLOGY

INTRODUCTION

In recent years the use of air conditioning and refrigeration equipment has increased tremendously. Practically all new building construction for business and commercial use have "year-round" air conditioning systems. Many homes now have air conditioning and the trend is toward greater use of "year-round" systems for cooling and heating. Food stores are requiring greater use of refrigeration systems for storage and display of products. With this great upswing in the use of air conditioning and refrigeration equipment a greater demand is made on the supply of trained personnel to plan and supervise installations, and to supervise the operation and maintenance of heating, air conditioning and refrigeration equipment.

This curriculum is designed to meet the basic requirements of a program to provide capable technicians in the industry. The principal objective has been to outline the required technical information and theoretical knowledge while maintaining a good balance of certain manipulative skills to enable the technician to function efficiently with the wide range of engineers, designers, skilled craftsmen, salesmen, and others in the field. Considerable emphasis is placed on self-development in the express hope that an individual trained hereby will continue to study and grow as the industry advances.

CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
AHR	311	Fundamentals of Refrigeration I	5	2	6
MA	301	Technical Mathematics	5	0	5
ENG	301	Reading Improvement	2	0	2
DD	307	General Drafting	2	3*	3
PHY	301	Physics: Properties of Matter	3	2	4
			17	7	20
SECOND QUARTER					
AHR	312	Fundamentals of Refrigeration II	3	4	5
MA	302	Technical Mathematics	5	0	5
ENG	302	English	3	0	3
DD	308	General Drafting	2	3*	3
PHY	302	Physics: Work, Energy, Power	3	2	4
			16	9	20

THIRD QUARTER

AHR	313	Commercial Refrigeration Systems Design	5	4	7
MA	303	Technical Mathematics	5	0	5
ENG	303	Technical Writing	3	0	3
PHY	303	Physics: Electricity	3	2	4
			<u>16</u>	<u>6</u>	<u>19</u>

FOURTH QUARTER

AHR	314	Heating Principles	3	4	5
AHR	315	Fuels and Burners	3	2	4
DD	310	Descriptive Geometry	2	4	4
ENG	304	Speech	2	0	2
SOC	302	Economics	3	0	3
PHY	311	Fluid Mechanics	3	0	3
			<u>16</u>	<u>10</u>	<u>21</u>

FIFTH QUARTER

AHR	318	Air Conditioning Principles	5	6	8
AHR	316	Circuits and Controls	4	2	5
DD	316	Air Conditioning Systems Drawings	2	3*	3
ISc	301	Industrial Organization and Management	3	0	3
			<u>14</u>	<u>11</u>	<u>19</u>

SIXTH QUARTER

AHR	319	Air Conditioning Systems Design	5	6	8
AHR	317	Estimating and Contracts	3	4	5
SOC	301	Human Relations	2	0	2
AHR	320	Seminar and Research	1	4	3
			<u>11</u>	<u>14</u>	<u>18</u>

* "Manipulative laboratory" involves development of skills and job proficiency. Credit of one quarter hour for each three hours of laboratory.

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
AHR	311	Fundamentals of Refrigeration I	5	2	6

Terminology, laws of refrigeration, absolute pressure and absolute temperature, energy conversion units; specific heat, latent heat, and sensible heat; measurement of heat in quantity and intensity; ton of refrigeration, pressure temperature relationships; transfer of heat by conduction, convection and radiation; elementary refrigeration, refrigeration cycle and refrigerant controls, tools, materials, methods applicable to air conditioning and refrigeration.

Prerequisite: None.

MA	301	Technical Mathematics	5	0	5
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The real number system is developed as an extension of natural numbers, integers, and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative.

Prerequisite: None.

ENG 301 Communicative Skills: Reading Improvement 2 0 2

A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

DD 307 General Drafting 2 3* 3

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

Prerequisite: None.

PHY 301 Physics: Properties of Matter 3 2 4

A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

Prerequisite: None.

SECOND QUARTER

AHR Fundamentals of Refrigeration II 3 4 5

Refrigerants and their applications in commercial refrigeration; system components, accessories, installation procedures and techniques; diagnosing service problems; mechanical difficulties; methods of defrosting; and making sketches of designs for high, medium and low temperature installation. Symbols for refrigeration and piping equipment will be used in making sketches.

Prerequisites: AHR 311, PHY 301.

MA 302 Technical Mathematics 5 0 5

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered.

Prerequisite: MA 301.

ENG 302 Communicative Skills: English 3 0 3

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

DD 308 General Drafting 2 3* 3

The student continues the study of orthographic projection with applications to orthographic instrument drawing. Dimensioning procedures and practices are emphasized and the student is introduced to the "working drawing." Methods of describing complex objects with auxiliary views and/or sections and conventions are taught.

Prerequisite: DD 307.

PHY 302 Physics: Work, Energy, Power 3 2 4

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

Prerequisites: MA 301, PHY 301.

THIRD QUARTER

AHR 313 Commercial Refrigeration Systems Design 5 4 7

Procedures of load calculating used in commercial refrigeration. Various types of installations are studied with emphasis on the product to be cooled, the desired temperatures to be maintained, and humidity conditions. Problems involving system balance and component capacity. Use of heat load charts, pipe sizing tables, manufacturers data, and specification sheets.

Prerequisite: AHR 312.

MA 303 Technical Mathematics 5 0 5

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate systems and their applications constitute other areas of study.

Prerequisite: MS 302.

ENG 303 Communicative Skills: Technical Writing 3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

PHY 303 Physics: Electricity 3 2 4

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course.

Prerequisites: MA 302, PHY 301.

FOURTH QUARTER

AHR 314 Heating Principles 3 4 5

Warm air systems, heat emitters, electric heating, forced hot water and steam heating systems including selection and sizing of equipment—registers, grills, furnaces,

boilers, radiators, baseboards, piping and ducts. Heating layout and specifications for an existing structure or one in blueprint stage will be prepared.

Prerequisites: PHY 301, DD 308.

AHR 315 Fuels and Burners 3 2 4

Fuels and burners used in supplying heat for various types of heating systems—coal, oil, natural gas, manufactured gas, liquified petroleum gas, and electricity. Experiments in equipment selection, installation, adjusting and servicing will be conducted.

Prerequisite: PHY 301.

DD 310 Descriptive Geometry 2 4 4

Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem.

Prerequisites: DD 302, MA 302.

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

SOC 302 Economics 3 0 3

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

PHY 311 Fluid Mechanics 3 0 3

Fundamental laws of fluid flow and application of these laws to the sizing of hot and cold water piping, steam piping, refrigerant piping, air ducts, pumps, and fans. Particular emphasis will be directed to calculations of capacity, horsepower, and head requirements of pumps and fans; to comparison of the several methods of piping and air duct sizing; and to methods of fluid flow measurement.

Prerequisites: MA 303, PHY 302.

FIFTH QUARTER

AHR 318 Air Conditioning Principles 5 6 8

An introduction to air distribution. Humidity, saturated and unsaturated mixtures; psychrometric charts and graphs; specific heat and air flow calculations, heat load calculations, the state of mixture of two air streams, bypass factor and dehumidification.

Prerequisite: AHR 313.

AHR 316 Circuits and Controls 4 2 5

Electric, Electronic and Pneumatic controls as related to ventilation, refrigeration and air conditioning systems. Practice in layouts, including symbols and schematic dia-

grams. Laboratory work in installation of control systems. Test instruments and their use. System adjustments for proper operation.

Prerequisites: AHR 313, AHR 314, PHY 303.

Corequisite: AHR 318.

DD 316 Air Conditioning Systems Drawings 2 3* 3

Drawing of air conditioning systems and study of related architectural and structural elements. Sheet metal intersections and developments and types of duct insulation. Air conditioning and refrigeration layouts, diagrams and schematics.

Prerequisites: DD 308, AHR 314.

ISc 301 Industrial Organization and Management 3 0 3

Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.

Prerequisite: None.

SIXTH QUARTER

AHR 319 Air Conditioning Systems Design 5 6 8

Self-contained units, remote units, unitary systems and control systems. Chilled water units, air duct units, high velocity duct units. Air and/or absorption systems, air handling and filtering systems.

Prerequisites: AHR 318, AHR 315, AHR 314.

AHR 317 Estimating and Contracts 3 4 5

Cost estimation, plans and specifications, equipment take-off, materials take-off, labor take-off, sub-contractors' estimates, overhead cost, and bid and contract procedures.

Prerequisites: AHR 318, DD 316.

SOC 301 Human Relations 2 0 2

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations, personal and group dynamics and self-adjustment.

Prerequisite: None.

AHR 320 Seminar and Research 1 4 3

Successful completion of the Air Conditioning and Refrigeration curriculum is climaxed by the student's conducting a research project and writing a report on this project. The student, through consultation with the instructors, will choose individual projects that will, when feasible, involve an actual installation. Frequent conferences with instructor will guide the student in the progress of research and in the preparation of the report.

Prerequisites: AHR 314, AHR 316, AHR 318.

BUSINESS TECHNOLOGY

INTRODUCTION

In North Carolina the opportunities in business are increasing. With the increasing population and industrial development in this State, business has become more competitive and automated. Better opportunities in business will be filled by students with specialized education beyond the high school level. The Business Curriculum is designed to prepare the student for employment in one of many occupations common to business. Training is aimed at preparing the student in every phase of work that might be encountered in the average business.

The specific objectives of the Business Curriculum are to develop the following competencies:

1. Understanding of the principles of organization and management in business operations.
2. Understanding and skill in effective communication for business.
3. Knowledge of human relations as they apply to the successful operations in the rapidly expanding business economy.

All students will be required to take the basic subjects in the business curriculum. In addition students will choose one of the options and successfully complete the subjects in that option.

BUSINESS TECHNOLOGY

BASIC SUBJECTS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	302	Communicative Skills: English	3	0	3
BUS	302	Typewriting (or Elective)*	1	4	3
MA	310	Business Mathematics	3	0	3
BUS	301	Introduction to Business	3	0	3
BUS	351	Business Law	3	0	3
			13	4	15

SECOND QUARTER

ENG	305	Communicative Skills: Report Writing	3	0	3
BUS	320	Accounting	5	2	6
BUS	352	Business Law	3	0	3
SOC	302	Economics	3	0	3
			—	—	—
			14	2	15

THIRD QUARTER

ENG	306	Communicative Skills: Business Communications	3	0	3
			—	—	—

FOURTH QUARTER

ENG	307	Communicative Skills: Oral Communications	3	0	3
BUS	364	Business Finance	3	0	3
DP	311	Introduction to Data Processing Systems	3	2	4
			—	—	—
			9	2	10

FIFTH QUARTER

ENG	304	Communicative Skills: Speech	2	0	2
SOC	310	Applied Psychology	3	0	3
			—	—	—
			5	0	5

SIXTH QUARTER

BUS	368	Taxes	3	0	3
BUS	333	Personnel Management	3	0	3
			—	—	—
			6	0	6

COURSE DESCRIPTIONS BY QUARTERS**COURSE TITLE**

	Course Hours Per Week	Quarter Hours Credit
Class	Lab.	

FIRST QUARTER

ENG	302	Communicative Skills: English	3	0	3
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Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

BUS	302	Typewriting	1	4	3
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Introduction to the touch typewriting system with emphasis on correct techniques, mastery of the keyboard, simple business correspondence, tabulation, and manuscripts. Minimum speed of 30 Net words per minute for five minutes.

Prerequisite: None.

MA	310	Business Mathematics	3	0	3
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This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business.

Prerequisite: None.

BUS 301 Introduction to Business	3	0	3
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A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization, and management.

Prerequisite: None.

BUS 351 Business Law	3	0	3
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A general course designed to acquaint the student with certain fundamentals and principles of business law, including contracts, negotiable instruments, partnerships, corporations, and agencies.

Prerequisite: None.

SECOND QUARTER

ENG 305 Communicative Skills: Report Writing	3	0	3
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A study and practice in the fundamentals of report writing, including style and mechanics in preparing reports of various types, which are most likely to be used by people engaged in business and the professions.

Prerequisite: ENG 302.

BUS 320 Accounting	5	2	6
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Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned.

Prerequisite: None.

BUS 352 Business Law	3	0	3
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Includes the study of laws pertaining to bailments, sales, risk-bearing, partnership-corporation, mortgages, and property rights.

Prerequisite: BUS 351.

SOC 302 Economics	3	0	3
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The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

THIRD QUARTER

ENG 306 Communicative Skills: Business Communications	3	0	3
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Develops skills in techniques in writing business communications. Emphasis is placed on writing action—getting sales letters and prospectuses. Business reports, summaries of business conferences, spot announcements for radio and television as well as letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry are also included in this course.

Prerequisite: ENG 305.

FOURTH QUARTER

ENG 307 Communicative Skills: Oral Communications 3 0 3

Includes study in areas of face-to-face conversation, delegating and accepting, understanding, listening, questioning, conferences, and the use of words.

Prerequisite: BUS 306.

BUS 364 Business Finance 3 0 3

Financing of business units, as individuals, partnerships, corporations, and trusts. A detailed study is made of the organization, management, and financing of businesses.

Prerequisite: None.

DP 311 Introduction to Data Processing Systems 3 2 4

Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers, prerequisite to the detail study of particular computer problems. This course is a prerequisite for all programming courses.

Prerequisite: None.

FIFTH QUARTER

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 307.

SOC 310 Applied Psychology 3 0 3

This course stresses the procedures of building an efficient, enthusiastic business team and deals with the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority.

Prerequisite: None.

SIXTH QUARTER

BUS 368 Taxes 3 0 3

Application of Federal and State taxes to various businesses and business conditions. A study of the following taxes: income, payroll, intangible, capital gain, sales and use, excise, and inheritance.

Prerequisite: None.

BUS 333 Personnel Management

Principles of human relationships; selection of personnel by interviewing and testing; and training of personnel.

Prerequisite: None.

OPTION BUSINESS ADMINISTRATION

SUGGESTED CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week	Class	Lab.	Quarter Hours Credit
FIRST QUARTER						
BUS	317	Sales Development	3	—	0	3
SECOND QUARTER						
BUS	339	Marketing	3	—	0	3
THIRD QUARTER						
BUS	355	Interpreting Accounting Records	3	—	0	3
SOC	304	Economics	3	—	0	3
BUS	316	Retailing	3	—	0	3
BUS	328	Business Insurance	3	—	0	3
BUS	360	Office Machines	2	—	2	3
			14	—	2	15
FOURTH QUARTER						
BUS	366	Budget and Record Keeping	3	—	0	3
BUS	337	Wholesaling	3	—	0	3
Elective**			3	—	0	3
			9	—	0	9
FIFTH QUARTER						
BUS	365	Business Finance	3	—	0	3
BUS	327	Advertising	3	—	2	4
BUS	335	Business Management	3	—	0	3
Elective**			3	—	0	3
			12	—	2	13
SIXTH QUARTER						
BUS	332	Sales Promotion Management	3	—	0	3
BUS	372	Principles of Supervision	3	—	0	3
Elective**			5	—	0	5
			11	—	0	11

* Elective courses must be selected from the associate degree curriculum. The institution may elect to require certain courses or may let the student have a free elective.

OPTION BUSINESS ADMINISTRATION COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE	Course Class	Hours Per Week Lab.	Quarter Hours Credit
FIRST QUARTER			
BUS 317 Sales Development	3	0	3
A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required.			
Prerequisite: None.			
SECOND QUARTER			
BUS 339 Marketing	3	0	3
A study of the marketing structure within the framework of the U. S. economic system. It includes the study of the movement of goods from producer to consumer through various channels of distribution, the functions of marketing, the social and economic implications.			
Prerequisite: None.			
THIRD QUARTER			
BUS 355 Interpreting Accounting Records	3	0	3
Designed to aid the student in developing a "use understanding" of accounting records, reports and financial statements. Interpretation, analysis, and utilization of accounting statements.			
Prerequisite: BUS 320.			
SOC 304 Economics	3	0	3
Greater depth in principles of economics, including a penetration into the composition and pricing of national output, distribution of income, international trade and finance, and current economic problems.			
Prerequisite: SOC 302.			
BUS 316 Retailing	3	0	3
A study of the role of retailing in the economy including development of present retail structure, functions performed, principles governing effective operation and managerial problems resulting from current economic and social trends.			
Prerequisite: None.			
BUS 328 Business Insurance	3	0	3
A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included.			
Prerequisite: None.			
BUS 360 Office Machines	2	2	3
A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the adding machines, full			

keyboard adding machines, calculator, and duplicating equipment.

Prerequisite: None.

FOURTH QUARTER

BUS 366 Budget and Record Keeping 3 0 3

The basic principles, methods, and procedures for preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning.

Prerequisite: BUS 320.

BUS 337 Wholesaling 3 0 3

The development of wholesaling; present-day trends in the United States. A study of the functions of wholesaling.

Prerequisite: None.

FIFTH QUARTER

BUS 365 Business Finance 3 0 3

An advanced course designed to give the student practical knowledge of the different kinds of stocks and bonds, mortgages, working capital, sinking funds, capitalization, sales of securities, surplus and dividends.

Prerequisite: BUS 364.

BUS 327 Advertising 3 2 4

The role of advertising in a free economy and its place in the media of mass communications. A study of advertising appeals; product and market research; selection of media; means of testing effectiveness of advertising. Theory and practice of writing advertising copy for various media.

Prerequisite: None.

BUS 335 Business Management 3 0 3

Principles of business management including overview of major functions of management such as planning, staffing, controlling, directing, and financing. Clarification of the decision-making function versus the operating function. Role of management in business—qualifications and requirements.

Prerequisite: None.

BUS 332 Sales Promotion Management 3 2 4

The scope and activities of sales promotion with emphasis on the coordination of advertising, display, special events, and publicity. External and internal methods of promoting business; budgeting, planning, and implementing the plan.

Prerequisite: BUS 327.

BUS 372 Principles of Supervision 3 0 3

Introduces the basic responsibilities and duties of the supervisor and his relationship to superiors, subordinates, and associates. Emphasis on securing an effective work force and the role of the supervisor. Methods of supervision are stressed.

Prerequisite: None.

OPTION ACCOUNTING

SUGGESTED CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week	Lab.	Quarter Hours Credit
FIRST QUARTER					
BUS	319	Credit Procedures and Problems	3	0	3
SECOND QUARTER					
BUS	339	Marketing	3	0	3
THIRD QUARTER					
BUS	321	Accounting	5	2	6
SOC	304	Economics	3	0	3
BUS	328	Business Insurance	3	0	3
BUS	360	Office Machines	2	2	3
			<hr/>	<hr/>	<hr/>
			13	4	15
FOURTH QUARTER					
BUS	353	Business Law	3	0	3
BUS	322	Accounting	5	2	6
			<hr/>	<hr/>	<hr/>
			8	2	9
FIFTH QUARTER					
BUS	374	Advanced Accounting	3	2	4
BUS	323	Cost Accounting	3	2	4
			<hr/>	<hr/>	<hr/>
			6	4	8
Elective**			6	0	6
			<hr/>	<hr/>	<hr/>
			12	4	14
SIXTH QUARTER					
BUS	371	Office Management	3	0	3
BUS	375	Machine Accounting	3	2	4
BUS	369	Auditing	3	0	3
			<hr/>	<hr/>	<hr/>
			9	2	10

** Elective courses must be selected from the associate degree curriculum. The institution may elect to require certain courses or may let the student have a free elective.

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course Hours Per Week	Lab.	Quarter Hours Credit
FIRST QUARTER					
BUS	319	Credit Procedures and Problems	3	0	3
Principles and practices in the extension of credit; collections procedures; laws pertaining to credit extension and collection are included.					
Prerequisite: None.					

SECOND QUARTER

BUS 339 Marketing

3 0 3

A study of the marketing structure within the framework of the U. S. economic system. It includes the study of the movement of goods from producer to consumer through various channels of distribution, the functions of marketing, the social and economic implications.

Prerequisite: None.

THIRD QUARTER

BUS 321 Accounting

5 2 6

Partnership and corporation accounting including a study of payrolls, Federal and State taxes. Emphasis is placed on the recording, summarizing and interpreting data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems.

Prerequisite: BUS 320.

SOC 304 Economics

Greater depth in principles of economics, including a penetration into the composition and pricing of national output, distribution of income, international trade and finance, and current economic problems.

Prerequisite: SOC 302.

BUS 328 Business Insurance

3 0 3

A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included.

Prerequisite: None.

BUS 360 Office Machines

2 2 3

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the ten-key adding machines, full keyboard adding machines, calculator, and duplicating equipment.

Prerequisite: None.

FOURTH QUARTER

BUS 353 Business Law

3 0 3

A study of the powers, policies, methods, and procedures used by the various Federal, State and local administrative agencies in promoting and regulating business enterprises. It includes a consideration of the constitutional and statutory limitations on these bodies and judicial review of administrative action.

Prerequisite: BUS 351 and 352.

BUS 322 Accounting

5 2 6

Thorough working knowledge of concepts used in preparation and interpretation of financial statements. Each item of the income statement and balance sheet is carefully analyzed.

Prerequisite: BUS 320 and 321.

FIFTH QUARTER

BUS 374 Advanced Accounting 3 2 4

Advanced accounting theory and principles as applied to special accounting problems, bankruptcy proceedings, estates and trusts, consolidation of statements, parent, and subsidiary accounting.

Prerequisite: BUS 320, 321, and 322.

BUS 323 Cost Accounting 3 2 4

Nature and purposes of cost accounting; accounting for direct labor, materials, and factory burden; job cost, and standard cost principles and procedures; selling and distribution costs, budgets, and executive use of cost figures.

Prerequisite: BUS 320, 321, 322 and 374.

SIXTH QUARTER

BUS 371 Office Management 3 0 3

Presents the fundamental principles of office management. Emphasis on the role of office management; office automation; planning, controlling, organizing and actuating in office management.

Prerequisite: BUS 340.

BUS 375 Machine Accounting 3 2 4

The application of various types of machines to accounting, statistical, and payroll work based on the principles of double entry accounting using the punch-card system. Visits to local installations with these types of machines.

Prerequisite: BUS 374.

BUS 369 Auditing 3 0 3

Principles of conducting audits and investigations; setting up accounts based upon audits; collecting data on working papers; arranging and systemizing the audit, and writing the audit report. Emphasis placed on detailed audits, internal auditing, and internal control.

Prerequisite: BUS 320, 321, 322 and 374.

OPTION

TRAFFIC AND TRANSPORTATION

SUGGESTED CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week	Lab.	Quarter Hours Credit
FIRST QUARTER					
BUS	317	Sales Development	3	0	3
SECOND QUARTER					
BUS	378	Traffic and Transportation	3	0	3
THIRD QUARTER					
BUS	355	Interpreting Accounting Records	3	0	3
BUS	385	ICC Law	3	0	3
BUS	379	Traffic and Transportation	3	0	3
BUS	390	Motor Carrier	3	0	3
			<hr/>	<hr/>	<hr/>
			12	0	12
FOURTH QUARTER					
BUS	386	ICC Law	3	0	3
BUS	380	Traffic and Transportation	3	0	3
BUS	391	Motor Carrier	3	0	3
			<hr/>	<hr/>	<hr/>
			9	0	9
FIFTH QUARTER					
BUS	335	Business Management	3	0	3
BUS	387	ICC Law	3	0	3
BUS	395	Traffic—Claims	3	0	3
			<hr/>	<hr/>	<hr/>
			9	0	9
SIXTH QUARTER					
BUS	398	Materials Handling	3	0	3
BUS	399	Traffic Management	3	0	3
Elective**			6	0	6
			<hr/>	<hr/>	<hr/>
			12	0	12

** Elective courses must be selected from the associate degree curriculum. The institution may elect to require certain courses or may let the student have a free elective.

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course Hours Per Week	Lab.	Quarter Hours Credit
FIRST QUARTER					
BUS	317	Sales Development	3	0	3

A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required.

Prerequisite: None.

SECOND QUARTER

BUS 378 Traffic and Transportation 3 0 3

This is an introductory course covering the American Transportation System. Emphasis is placed on developments leading to the legislative supervision of the carriers, freight traffic territories, traffic flow, freight classifications, freight rates, and freight claims.

Prerequisite: None.

THIRD QUARTER

BUS 355 Interpreting Accounting Records 3 0 3

Designed to aid the student in developing a "use understanding" of accounting records, reports and financial statements. Interpretation, analysis, and utilization of accounting statements.

Prerequisite: BUS 320.

BUS 385 ICC LAW

Designed to aid the student in making a thorough analysis of the Interstate Commerce Act; review history of Act and related Acts.

Prerequisite: BUS 351 and 352.

BUS 379 Traffic and Transportation 3 0 3

A study of the construction and filing of tariffs, freight rates, terminal facilities, storage, weights, routing, warehousing, and materials handling.

Prerequisite: BUS 378.

BUS 390 Motor Carrier 3 0 3

An introduction to special problems relating to tariffs and rates of motor carriers.

Prerequisite: None.

FOURTH QUARTER

BUS 386 ICC Law 3 0 3

A detailed study is made of the procedural policy involved in appearing before the Interstate Commerce Commission.

Prerequisite: BUS 385.

BUS 380 Traffic and Transportation 3 0 3

Stresses through-routes and rates, milling in transit, technical tariff and rate interpretation, overcharges and undercharges, loss and damage, import and export tariff, classification committee procedure, and rate committee procedure.

Prerequisite: BUS 379.

BUS 391 Motor Carrier 3 0 3

A continuation of special problems relating to tariffs, rates, circulars, pertaining to the Motor Carrier field.

Prerequisite: BUS 390.

FIFTH QUARTER

BUS 335 Business Management

Principles of business management including overview of major functions of management such as planning, staffing, controlling, directing, and financing. Clarification of the decision-making function versus the operating function. Role of management in business—qualifications and requirements.

Prerequisite: None.

BUS 387 ICC Law	3	0	3
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Devoted to case study of applications of the Interstate Commerce Act.

Prerequisite: BUS 386.

BUS 395 Traffic — Claims	3	0	3
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Designed to provide knowledge about rights and liabilities of carriers, consignors, and consignees; claims, their procedure, settlement, and prevention.

Prerequisite: None.

SIXTH QUARTER

BUS 398 Materials Handling	3	0	3
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A study of basic containers and equipment, packaging and material protection, standardization, warehousing, traffic, and shipping. The various analytical approaches used in formulating materials handling improvements in existing or proposed operations.

Prerequisite: None.

BUS 399 Traffic Management	3	0	3
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Develops the purpose, function, and operation of traffic management; illustrates the differences in various areas of traffic; and shows relationship to other business operations.

Prerequisite: None.

Elective**

ARCHITECTURAL TECHNOLOGY—FURNITURE TECHNOLOGY—MECHANICAL TECHNOLOGY DRAFTING AND DESIGN

INTRODUCTION

Purpose of Curriculum

This curriculum guide was prepared for the purpose of outlining a training program for students of drafting and design technology. There are certain identifiable duties which are common to all technicians of this general classification and which comprise the basic areas of technical knowledge they need. This curriculum has been designed for training persons in the accepted performance of these basic duties that will be assigned, and to enable the individual student to become proficient in a short time after he becomes employed in the industry.

Courses in general education have been included to give a student the assurance that comes with education upon a broad base. The technician associates with many levels of thought and expression—administrative personnel, scientists, engineers, skilled workmen—and must be able to communicate effectively with all levels. Courses in the skills of communication, human relations, economics and the field of industrial organization and management have been provided to assist the student to develop understanding and confidence. Courses containing essential information from related subject areas, such as mathematics, physics, and mechanics have been included in order to provide the student a better academic base for his training.

CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
DD	301	Technical Drafting	2	6	4
MA	301	Technical Mathematics	5	0	5
ENG	301	Reading Improvement	2	0	2
PHY	301	Physics: Properties of Matter	3	2	4
ISc	301	Industrial Organization & Mgmt.	3	0	3
			<u>15</u>	<u>8</u>	<u>18</u>

SECOND QUARTER

DD	302	Technical Drafting	2	6	4
MA	302	Technical Mathematics	5	0	5
ENG	302	English	3	0	3
PHY	302	Physics: Work, Energy, Power	3	2	4
			<hr/> 13	<hr/> 8	<hr/> 16

THIRD QUARTER

DD	303	Technical Drafting	2	6	4
MA	303	Technical Mathematics	5	0	5
ENG	303	Technical Writing	3	0	3
SOC	302	Economics	3	0	3
PHY	303	Physics: Electricity	3	2	4
ENG	304	Speech	2	0	2
			<hr/> 18	<hr/> 8	<hr/> 21

FOURTH QUARTER

(1) ADD	304	Technical Drafting	2	6	4
(2) FDD	304	Technical Drafting	2	6	4
(3) MDD	304	Technical Drafting	2	6	4
(1-2) DES	304	Visual Design I	2	6	4
(1-2) TD	304	Tectonic Design	2	6	4
(3) MECH	301	Materials, Tools & Processes	2	2	3
(3) MECH	302	Materials, Tools & Processes	2	2	3
(1-2-3) DD	310	Descriptive Geometry	2	4	4
(3) MECH	304	Metallurgy	3	2	4

FIFTH QUARTER

(1) ADD	305	Design Drafting	2	6	4
(2) FDD	305	Design Drafting	2	6	4
(3) MDD	305	Design Drafting	2	6	4
(1-2) DES	305	Visual Design II	2	4	4
(1) ASM	305	Strength of Materials	3	0	3
(1) ACM	305	Construction Materials & Methods	3	0	3
(1) AS	305	Architectural Specifications	1	0	1
(1) SUR	305	Surveying	2	1	2
(2) MM	306	Upholstery Materials & Methods	2	2	3
(2) MM	305	Case Materials & Methods	2	2	3
(3) MECH	305	Strength of Materials	3	2	4
(3) PHY	305	Hydraulics & Pneumatics	2	4	4
(3) DD	311	Mechanisms	3	2	4

SIXTH QUARTER

(1) ADD	306	Design Drafting	4	10	8
(2) FDD	306	Design Drafting	4	10	8
(3) MDD	306	Design Drafting	4	6	6
(1-2-3) SOC	301	Human Relations	2	0	2
(1) ASD	306	Structural Design	3	0	3
(1) ME	306	Mechanical Equipment	2	2	3
(2) FD	306	Styling	2	4	4
(3) ELN	301	Industrial Control	3	2	4
(3) DD	312	Jig & Fixture Design	2	4	4

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE		Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER		Class	Lab.	
DD 301	Technical Drafting	2	6	4
Introduction to drafting and design practices and principles. Attainment of basic skills and techniques of drafting: use of drafting equipment; lettering; freehand orthographic and pictorial sketching; geometric construction; orthographic instrument drawing of principal views; and standards and practices of dimensioning and noting. Methods of reproducing, filing, and storing drawings are studied and the student is introduced to "working drawings."				
Prerequisite: None.				
MA 301	Technical Mathematics	5	0	5
The real number system is developed as an extension of natural numbers, integers, and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative.				
Prerequisite: None.				
ENG 301	Communicative Skills: Reading Improvement	2	0	2
A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.				
Prerequisite: None.				
PHY 301	Physics: Properties of Matter	3	2	4
A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.				
Prerequisite: None.				
ISc 301	Industrial Organization and Management	3	0	3
Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.				
Prerequisite: None.				
SECOND QUARTER				
DD 302	Technical Drafting	2	6	4
The application of orthographic projection principles to the more complex drafting problems, primary and secondary auxiliary views, simple and successive revolutions, and sections and conventions will be studied. The introduction of the graphical an-				

alysis of space problems involving points, lines, planes, and a combination of these elements. Precision and limit dimensioning practices.

Prerequisite: DD 301.

MA 302 Technical Mathematics **5 0 5**

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered.

Prerequisite: MA 301.

ENG 302 English **3 0 3**

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

PHY 302 Physics: Work, Energy, Power **3 2 4**

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

Prerequisites: PHY 301, MA 301.

THIRD QUARTER

DD 303 Technical Drafting **2 6 4**

Intersection and developments and their practical solutions. Where applicable, model solutions accompany the problems. The various techniques employed to produce and render isometric and oblique drawings, isometric, dimetric and trimetric projections, will be included.

Prerequisite: DD 302.

MA 303 Technical Mathematics **5 0 5**

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate systems and their applications constitute other areas of study.

Prerequisite: MA 302.

ENG 303 Technical Writing **3 0 3**

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

Prerequisite: ENG 302.

SOC 302 Economics**3 0 3**

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

(3) PHY 303 Physics: Electricity**3 2 4**

Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course.

Prerequisites: PHY 301, MA 302.

ENG 304 Communicative Skills: Speech**2 0 2**

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

FOURTH QUARTER**(1) ADD 304 Technical Drafting****2 6 4**

An introduction to architectural Drafting in the study of working drawings, organization, basic construction methods, conventions, symbols, drafting room organization and relationship of personnel within the architectural office.

Prerequisite: DD 303.

(2) FDD 304 Technical Drafting**2 6 4**

A study of the anatomical relationships influencing furniture construction and design. Methods of detailing, general furniture sizes, standard parts, dimensioning and noting practices will be explored. Preliminary sketches, scale drawings, full size drawings will be made.

Prerequisite: DD 303.

(3) MDD 304 Technical Drafting**2 6 4**

Applications and constructions of charts, graphs, and nomographs in engineering and technical data. Screw threads, springs, keys, rivets, piping, and welding symbols, methods of representing and specifying will be covered. Basic mechanisms of motion transfer, gears and cams, will be studied and drawn with emphasis on methods of specifying, calculating, dimensions, and delineating.

Prerequisite: DD 303.

(1-2) DES 304 Visual Design I**2 6 4**

This course is a study of the basic vocabulary of two-dimensional design; point, line, texture, value and color. Application of this vocabulary in drawing and elementary design problems leading to an understanding of two-dimensional form and space.

Prerequisite: None.

(1-2) TD 304 Tectonic Design**2 6 4**

An exploration of three-dimensional design using a variety of materials for shaping, construction and ornamenting.

Prerequisite: None.

(3) MECH 301 Materials, Tools and Processes**3 2 3**

An overall view of the methods and procedures used to transform raw materials into finished products. Characteristics of metals, woods, and plastics and how these characteristics affect the selection and use of materials and methods of production in the manufacture of an object. Unit production system, sand casting, forging and allied processes, welding, sheet metal working processes, and woodworking processes constitute areas of study.

Prerequisite: None.

(3) MECH 302 Materials, Tools and Processes**2 2 3**

Study of manufacturing processes involving machining of materials. The operation of lathes, grinders, drills, milling machines, shapers, planers, metal sawing machines, broaching machines, gear cutting machines, and finishing machines. Dimensional control and precision measuring as applied to machining of materials.

Prerequisite: MECH 301.

DD 310 Descriptive Geometry**2 4 4**

Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem.

Prerequisites: DD 302, MA 302.

(3) MECH 304 Metallurgy**3 2 4**

Properties of metals and various methods of changing these properties, classifications of metals, powder metallurgy and factors contributing to production and selection of metals for use.

Prerequisite: None.

FIFTH QUARTER**(1) ADD 305 Design Drafting****2 6 4**

Further working drawings will be made relative to more complex structures with greater emphasis on cost.

Prerequisite: ADD 304.

(2) FDD 305 Design Drafting**2 6 4**

Preliminary design sketches of both case goods and upholstered pieces will be carried through detail drawings accompanied by specifications and bills of materials. Architectural considerations related to customer services and showroom planning will be studied.

Prerequisites: FDD 304, DES 304, TD 304.

(3) MDD 305 Design Drafting**2 6 4**

Basic design is introduced in the study of motion transfer mechanisms as they relate to power trains. Principles of design sketching, design drawing, layout drafting, de-

tailing from layouts, production drawings and simplified drafting practices constitute areas of study. Types and methods of specifying materials and workmanship are an integral part of the course.

Prerequisites: DD 304, MA 302, PHY 303.

(1-2) DES 305 Visual Design II **2 4 4**

An extension of DES 304 dealing with basic problems in representing lines, planes and solids in space; rendering techniques and culminating with the planning and organization of exhibits.

Prerequisites: DES 304, TD 304.

(1) ASM 305 Strength of Materials **3 0 3**

Structural materials as used in building construction will be studied with computations of stresses, strains and sizing of elements. Basic limitations as applied to construction, steel and wood will be investigated.

Prerequisites: PHY 301, PHY 302, MA 301, MA 302, MA 303.

(1) ACM 305 Construction Materials & Methods **3 0 3**

Materials used in the construction of dwellings and commercial buildings, their economic values and limitations affected by locality budget and codes.

Prerequisite: None.

(1) AS 305 Architectural Specifications **1 0 1**

The purpose and writings of specifications will be studied along with practical applications of working drawings made previously in this course. Contract documents will be analyzed and studied.

Prerequisite: ADD 304.

(1) SUR 305 Surveying **2 1 2**

Basic instrumentations and topography will be studied together with field trips and drafting room applications of site surveying.

Prerequisites: MA 301, MA 302, MA 303.

(2) MM 306 Upholstery Materials & Methods **2 2 3**

Types of materials used in upholstering and construction methods which affect the design of furniture, materials characteristics, fastening methods, accessory materials, frame types and construction are included in this course.

Prerequisite: None.

(2) MM 305 Case Materials & Methods **2 2 3**

A comprehensive study of the materials and methods of furniture manufacturing. Basic woodworking operations and methods of joining wood, metals, plastics, appliques, edging and hardware will be included.

Prerequisite: None.

(3) MECH 305 Strength of Materials **3 2 4**

Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such as static, impact, varying and dynamic. Analyses of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components.

Prerequisites: PHY 303, MA 303.

(3) PHY 305 Hydraulics & Pneumatics **2 4 4**

The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electro-hydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs.

Prerequisite: PHY 302.

(3) DD 311 Mechanisms **3 2 4**

Mathematical and drafting room solutions of problems involving the principles of machine elements. Study of motions of linkages, velocities and acceleration of points within a link mechanism; layout methods for designing cams, belts, pulleys, gears and gear trains.

Prerequisites: DD 304, MA 303, PHY 302.

SIXTH QUARTER

(1) ADD 306 Design Drafting **4 10 8**

Research to solve a problem in design by consulting manuals and periodicals. A problem will be assigned comprising preliminary programs, preliminary sketches, presentation drawings and a complete set of working drawings. Then drawings will be obtained so as to enable the Draftsman to apply his previous knowledge and incorporate it in drawings which could be used for erecting a permanent structure.

Prerequisites: ADD 304, ADD 305, All Design Courses.

(2) FDD 306 Design Drafting **4 10 8**

Research to solve the design problem of developing a correlated furniture group using charts, periodicals, lab experiments and reference sources. A written report, preliminary design sketches, finished details, pictorial drawings and specifications are required as a part of the problem.

Prerequisites: FDD 304, FDD 305, All Design Courses.

(3) MDD 306 Design Drafting **4 6 6**

Research to solve a problem in design by consulting various manuals, periodicals, and through laboratory experiments. A written technical report, preliminary design sketches, layout drawings, detail drawings, assembly and sub-assembly drawings, pictorial drawings, exploded pictorial assembly, patent drawings and specifications are required as a part of the problem.

Prerequisites: DD 305, DD 310.

(1-2-3) SOC 301 Human Relations **2 0 2**

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations; personal and group dynamics and self-adjustment.

Prerequisite: None.

(1) ASD 306 Structural Design **3 0 3**

Practical applications and working drawings will be made and existing drawings shall be studied to understand "structural investigation."

Prerequisite: ASM 305.

(1) ME 306 Mechanical Equipment **2 2 3**

A general study of heating, air conditioning, plumbing and electrical installation as used in residential and commercial construction. This course limits itself to give the architectural Draftsman the ability to interpret and understand working drawings.

Prerequisite: None.

(2) FD 306 Styling **2 4 4**

A study of the periods and styles of furniture and the factors which influenced their development. Methods of styling and decorating will be included with basic principles of design.

Prerequisite: None.

(3) ELN 301 Industrial Controls **3 2 4**

Industrial controls is the study of modern methods of controlling machinery by electronic circuitry. Machinery controls and electronic mechanisms that automatically operate machines will be studied. Types of motors, generators, control signals and devices, thyratrons, gates, switches, and servomechanism circuits are major areas of study.

Prerequisite: PHY 303.

(3) DD 312 Jig and Fixture Design **2 4 4**

Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with the types of jigs and fixtures and their design.

Prerequisites: DD 305, DD 311.

ELECTRONICS TECHNOLOGY

INTRODUCTION

Purpose of Curriculum

The field of electronics has developed at a rapid pace since the turn of the century. For many years the major concern of electronics was in the area of communications. Developments during World War II and in the period since have revolutionized production techniques. New industries have been established to supplement the need and demand for electronics equipment.

Many opportunities exist for men and women with a technical education in electronics. This curriculum provides a basic background in electronic related theory with practical applications of electronics for business and industry. Courses are designed to develop competent electronics technicians who may take their place as an assistant to an engineer, or as a liaison between the engineer and the skilled craftsman.

CURRICULUM BY QUARTERS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER			Class	Lab.	
MA	301	Technical Mathematics	5	0	5
PHY	301	Physics: Properties of Matter	3	2	4
ENG	301	Reading Improvement	2	0	2
DD	307	General Drafting	2	3*	3
ELEC	310	Direct Current Electricity	5	6	8
			<hr/> 17	<hr/> 11	<hr/> 22
SECOND QUARTER					
MA	302	Technical Mathematics	5	0	5
PHY	302	Physics: Work, Energy, Power	3	2	4
ENG	302	English	3	0	3
ELEC	311	Alternating Current Electricity	5	6	8
			<hr/> 16	<hr/> 8	<hr/> 20
THIRD QUARTER					
MA	303	Technical Mathematics	5	0	5
ENG	303	Technical Writing	3	0	3
SOC	301	Human Relations	2	0	2
ELN	312	Electronics I	5	8	9
			<hr/> 15	<hr/> 8	<hr/> 19

FOURTH QUARTER

MA	304	Technical Mathematics	3	0	3
PHY	304	Physics: Light and Sound	3	2	4
ENG	304	Speech	2	0	2
ELN	313	Electronics II	8	8	12
			<hr/> 16	<hr/> 10	<hr/> 21

FIFTH QUARTER

ISc	301	Industrial Organization and Management	3	0	3
ELN	316	Transistor Applications	5	4	7
ELN	317	Communications and Ultra High Frequency	2	4	4
ELN	318	Special Circuitry	5	4	7
			<hr/> 15	<hr/> 12	<hr/> 21

SIXTH QUARTER

SOC	302	Economics	3	0	3
ELN	319	Instrumentation	5	6	8
ELN	320	Circuit Analysis and Maintenance	5	6	8
			<hr/> 13	<hr/> 12	<hr/> 19

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE		Course Hours Per Week		Quarter Hours Credit
FIRST QUARTER		Class	Lab.	
MA 301	Technical Mathematics	5	0	5

The real number system is developed as an extension of natural numbers, integers and rational numbers. Insight into the processes of arithmetic and algebra is provided. Additional topics include sets, equations, number bases, number lines, coordinate systems, trigonometry of the right triangle, vectors, dimensional analysis, and the derivative.

Prerequisite: None.

PHY	301	Physics: Properties of Matter		3	2	4
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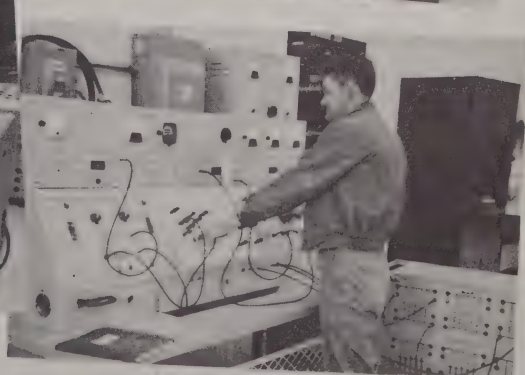
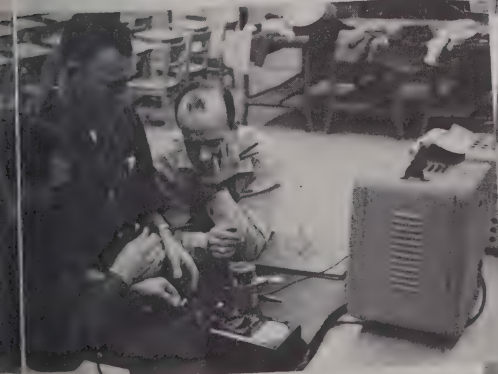
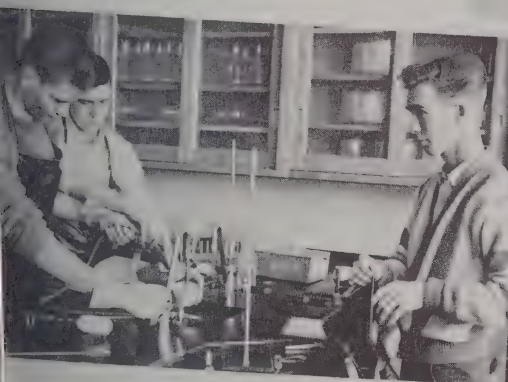
A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course.

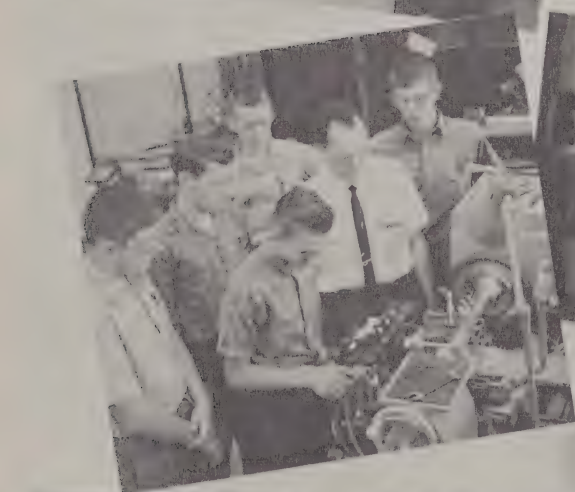
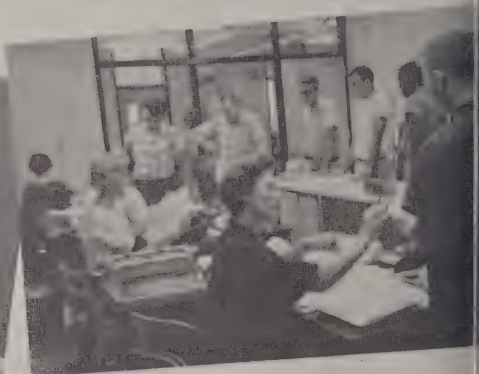
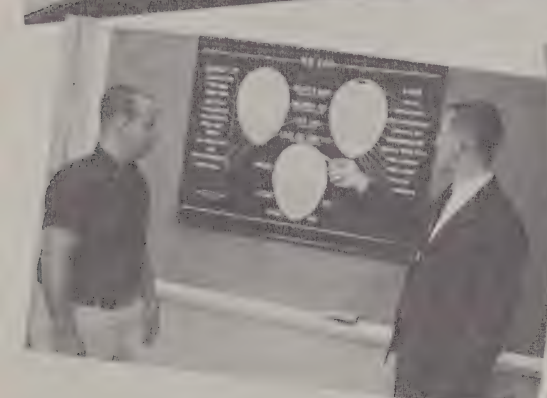
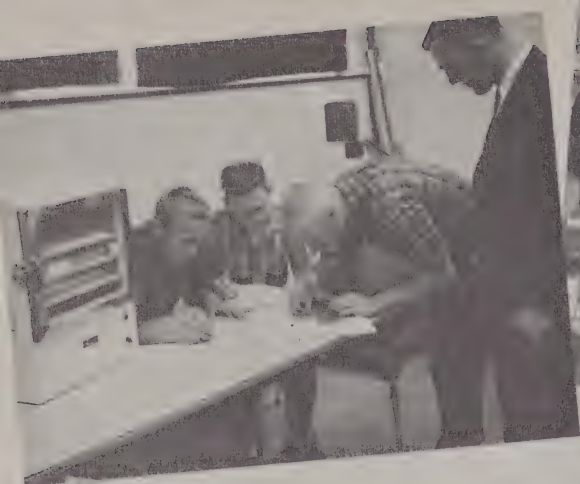
Prerequisite: None.

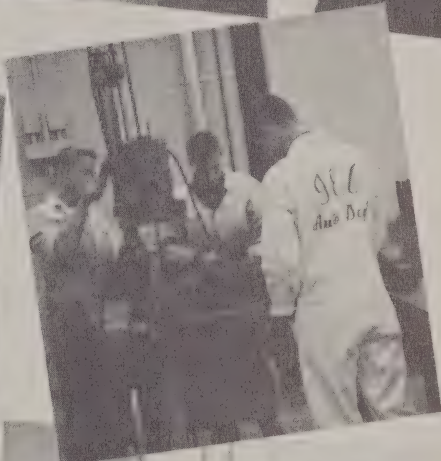
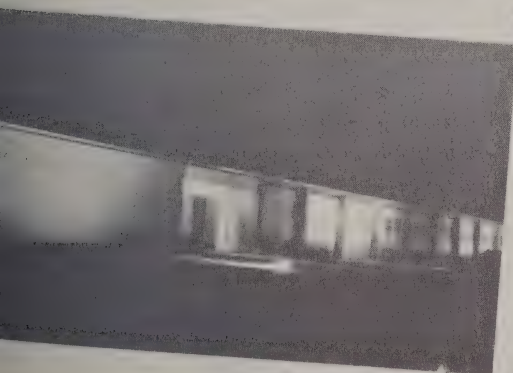
ENG	301	Communicative Skills: Reading Improvement		2	0	2
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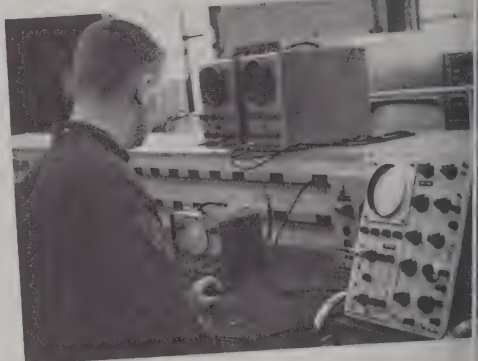
A concentrated effort to improve the student's ability to comprehend what he read by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.









DD 307 General Drafting**2 3* 3**

An introductory course in drafting for students needing a knowledge of drawing principles and practices for reading and describing objects in the graphic language. The student is expected to gain basic skills in drawing with instruments, lettering, geometrical constructions, freehand sketching, and describing objects orthographically with principal views. Freehand sketching and orthographic reading are to be emphasized.

Prerequisite: None.

ELEC 310 Direct Current Electricity**5 6 8**

Basic electricity subjects include: structure of matter, electrical terminology and symbols, electron theory of current flow, magnets and magnetic fields. Rigorous mathematical analysis of direct current resistive circuits. Ohm's Law, Kirchhoff's Laws, Thevenin's Theorem, Norton's Theorem, the Superposition Principle and loop current method. Solution of complex resistive networks. Fundamental principles of inductors, capacitors, and time constants circuits are introduced.

Prerequisite: None.

SECOND QUARTER**MA 302 Technical Mathematics****5 0 5**

Algebraic operations are applied to linear, quadratic, and polynomial functions and special equations of second degree. Complex numbers are introduced and the study of the derivative is continued. Selected applications involving rates of change, maxima and minima, approximation, areas, and volumes are considered.

Prerequisite: MA 301.

PHY 302 Physics: Work, Energy, Power**3 2 4**

Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity, and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas.

Prerequisite: MA 301.

ENG 302 Communicative Skills: English**3 0 3**

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

ELEC 311 Alternating Current Electricity**5 6 8**

Alternating current and voltage: alternating current theory. Mathematical analysis is made of both sine and non-sine wave forms. Inductive reactance, capacitive reactance, and impedance characteristics of alternating current circuits are investigated. The use of vector and complex numbers in circuit impedance. Series and parallel resonant circuit conditions are compared and practical application of these conditions explained.

Prerequisites: ELEC 310, MA 301, PHY 301.

THIRD QUARTER

MA 303 Technical Mathematics

5 0 5

Ideas of algebra are used in a study of trigonometric, logarithmic and exponential functions. Selected applications of calculus reinforce this approach. Polar coordinates are introduced and their applications expanded. Complex numbers, vectors, coordinate systems and their applications constitute other areas of study.

Prerequisite: MA 302.

ENG 303 Communicative Skills: Technical Writing

3 0 3

The fundamentals of English are utilized as a background for the organization and techniques of modern technical writing. Exercises in developing typical technical reports, using writing techniques and graphic devices, are completed by the students. Practical application in the preparation of a full-length technical report is required of each student at the end of the term.

Prerequisite: ENG 302.

SOC 301 Human Relations

2 0 2

Principles of interpersonal relations including a consideration of motivation, feelings, emotions, and learning with reference to their applications to on-the-job situations; personal and group dynamics and self-adjustment.

Prerequisite: None.

ELN 312 Electronics I

5 8 9

A treatment of electron tubes, semi-conductors and their associated circuitry; thermionic emission; diode, triode, tetrode and pentode characteristics. Theory of semi-conductor diode and transistor operation is studied in detail. Application of vacuum tubes and semi-conductors in power supplies, voltage amplifiers, power amplifiers, and the advantages and disadvantages of each considered.

Prerequisites: ELEC 310, MA 301, PHY 301.

FOURTH QUARTER

MA 304 Technical Mathematics

3 0 3

A further study of analytical geometry, algebra, and calculus: the binomial expansion, arithmetic and geometric progressions, polynomial functions and methods of solution, integration techniques and use of integral tables, polar equations, and an introduction to solid analytical geometry.

Prerequisite: MA 303.

PHY 304 Physics: Light and Sound

3 2 4

A study of sound and wave motion and its technical applications to industry and related fields. Light and illumination. Principles of optical instruments. Practical aspects are emphasized.

Prerequisite: MA 301.

ENG 304 Communicative Skills: Speech

2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth

in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 302.

ELN 313 Electronics II 8 8 12

Design and analysis of vacuum tube and transistor oscillators, radio frequency analysis and intermediate frequency amplifiers. Frequency response, stage gain, distortion, noise characteristics and frequency stability will be explored.

Prerequisites: ELN 312, MA 303.

FIFTH QUARTER

ISc 301 Industrial Organization and Management 3 0 3

Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations.

Prerequisite: None.

ELN 316 Transistor Applications 5 4 7

Transistor circuitry and design problems. Junction diodes, transistor triodes, tunnel and zener diodes with associated circuitry. Temperature variation, transit time, and frequency response are studied in detail.

Prerequisites: ELN 313, MA 304.

ELN 317 Communications and Ultra High Frequency 2 4 4

Application of previously studied circuits to the broad field of communications and ultra high frequency. Amplitude and frequency modulated transmitters, receivers, wave guides, cavity resonators; klystron, magnetron and traveling wave tubes are discussed.

Prerequisite: ELN 313.

ELN 318 Special Circuitry 5 4 7

The design and analysis of special circuitry: wave shaping, pulse techniques, broad-band amplifiers, diode switches, multivibrators, gates, magnetic amplifiers, chopper amplifiers, clipper and clamping circuits, synchro and servo systems, photo control devices, step counters and other specific application circuitry.

Prerequisites: ELN 314, ELN 316.

SIXTH QUARTER

SOC 302 Economics 3 0 3

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large.

Prerequisite: None.

ELN 319 Instrumentation

5

6

8

A basic study of sensory devices for detecting changes in pressure, temperatures, sound, light and electricity; the associated circuitry and indicating devices.

Prerequisites: ELN 316, ELN 318.

ELN 320 Circuit Analysis and Maintenance

5

6

8

Systematic analysis of complex circuitry. Methods of locating and correcting malfunctions. Troubleshooting by voltage measurements; resistance measurements, and waveform observations. Schematic reading and interpretation.

Prerequisites: ELN 319, MA 304, PHY 304.

SECRETARIAL TECHNOLOGY

The demand for better qualified secretaries in our ever-expanding business, medical, legal, and engineering fields is becoming more acute. The purpose of these curriculums is to outline a program that will provide training in the accepted procedures required in each of these fields and to enable persons to become proficient soon after accepting employment.

Each curriculum (executive, legal, medical and engineering) is designed to offer the students the necessary secretarial skills in typing, business machine operation, dictation, transcription, and terminology for employment in each of these major fields. The special training in secretarial subjects is supplemented by related courses in math, accounting, business law and personality development.

Graduates of this program may be employed as a stenographer, a secretary, a typist, or general clerical worker. In addition to taking dictation and transcribing, the secretary may be given additional responsibilities such as meeting office callers, screening telephone calls, and being an assistant to an administrator. Positions may be found in such businesses as insurance companies, hospitals, doctors' offices, banks, law offices and industrial firms.

SECRETARIAL TECHNOLOGY BASIC SUBJECTS

COURSE TITLE			Course Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	302	Communicative Skills: English	3	0	3
BUS	302	Typewriting (or Elective)*	1	4	3
MA	310	Business Mathematics	3	0	3
BUS	301	Introduction to Business	3	0	3
BUS	306	Shorthand (or Elective)*	1	4	3
BUS	351	Business Law	3	0	3
			14	8	18
SECOND QUARTER					
ENG	305	Communicative Skills: Report Writing	3	0	3
BUS	303	Typewriting (or Elective)*	1	4	3
BUS	307	Shorthand	1	4	3
BUS	320	Accounting	5	2	6
SOC	302	Economics	3	0	3
			13	10	18

* Elective courses must be selected from the business education curriculum.

THIRD QUARTER

ENG	306	Communicative Skills:			
		Business Communications	3	0	3
BUS	304	Typewriting	1	4	3
BUS	308	Shorthand	1	4	3
SOC	312	Personality Development	3	0	3
BUS	360	Office Machines	2	2	3
			<hr/>	<hr/>	<hr/>
			10	10	15

FOURTH QUARTER

ENG	307	Communicative Skills:			
		Oral Communications	3	0	3
DP	311	Introduction to Data Processing Systems	3	2	4
BUS	361	Office Machines	2	2	3
			<hr/>	<hr/>	<hr/>
			8	4	10

FIFTH QUARTER

ENG	304	Communicative Skills: Speech	2	0	2
BUS	340	Secretarial Procedures	3	0	3
SOC	310	Applied Psychology	3	0	3
BUS	366	Budget and Record Keeping	3	0	3
			<hr/>	<hr/>	<hr/>
			11	0	11

SIXTH QUARTER

BUS	371	Office Management	3	0	3
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SECRETARIAL TECHNOLOGY COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE

Course Hours
Per Week
Class Lab. Credit

FIRST QUARTER

ENG 302 Communicative Skills: English **3 0 3**

Designed to aid the student in the improvement of self-expression in business and technical composition. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life.

Prerequisite: None.

BUS 302 Typewriting **1 4 3**

Introduction to the touch typewriting system with emphasis on correct techniques, mastery of the keyboard, simple business correspondence, tabulation, and manuscripts. Minimum speed of 30 net words per minute for five minutes.

Prerequisite: None.

MA 310 Business Mathematics **3 0 3**

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount,

commission, taxes, and pertinent uses of mathematics in the field of business.

Prerequisite: None.

BUS 301 Introduction to Business 3 0 3

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization, and management.

Prerequisite: None.

BUS 306 Shorthand 1 4 3

A beginning course in the theory and practice of reading and writing shorthand. Emphasis on phonetics, penmanship, work families, brief forms, and phrases. Minimum dictation rate of 40 words per minute on new material for five minutes.

Prerequisite: None.

BUS 351 Business Law 3 0 3

A general course designed to acquaint the student with certain fundamentals and principles of business law, including contracts, negotiable instruments, partnerships, corporations, and agencies.

Prerequisite: None.

SECOND QUARTER

ENG 305 Communicative Skills: Report Writing 3 0 3

A study and practice in the fundamentals of report writing, including style and mechanics in preparing reports of various types, which are most likely to be used by people engaged in business and the professions.

Prerequisite: ENG 302.

BUS 303 Typewriting 1 4 3

Instruction emphasizes the development of speed and accuracy with further mastery of correct typewriting techniques. These skills and techniques are applied in tabulation, manuscript, correspondence, and business forms. Minimum speed of 40 net words per minute for five minutes.

Prerequisite: BUS 302 or a net speed of 30 words per minute for five minutes.

BUS 307 Shorthand 1 4 3

Continued study of theory with greater emphasis on dictation for transcription. Minimum dictation rate of 60 words per minute required for five minutes on new material.

Prerequisite: BUS 306 or a dictation rate of 40 words per minute on new material for five minutes.

BUS 320 Accounting 5 2 6

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting—collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned.

Prerequisite: MA 310.

SOC 302 Economics**3 0 3**

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large. Prerequisite: None.

THIRD QUARTER**ENG 306 Communicative Skills:****Business Communications****3 0 3**

Develops skills in techniques in writing business communications. Emphasis is placed on writing action—getting sales letters and prospectuses. Business reports, summaries of business conferences, spot announcements for radio and television as well as letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry are also included in this course.

Prerequisite: ENG 305.

BUS 304 Typewriting**1 4 3**

Emphasis on production typing problems and speed building. Attention to the development of the student's ability to function as an expert typist, producing mailable copies. The production units are tabulation, manuscript, correspondence, and business forms. Minimum speed of 50 net words per minute for five minutes.

Prerequisite: BUS 303 or a net speed of 40 words per minute for five minutes.

BUS 308 Shorthand**1 4 3**

Theory and speed building. Introduction to office style dictation. Emphasis is on development of speed in dictation and accuracy in transcription. Minimum dictation rate of 80 words per minute required for five minutes on new material.

Prerequisite: BUS 307.

SOC 312 Personality Development**3 0 3**

Designed to help the student recognize the importance of the physical, intellectual, social, and emotional dimensions of personality. Emphasis is placed on grooming and methods of personality improvement.

Prerequisite: None.

BUS 360 Office Machines**2 2 3**

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the ten-key adding machines, full keyboard adding machines, calculator, and duplicating equipment.

Prerequisite: None.

FOURTH QUARTER**ENG 307 Communicative Skills: Oral Communication****3 0 3**

Includes study in face-to-face conversation, delegating and accepting, understanding, listening, questioning, conferences, and the use of words.

Prerequisite: BUS 306.

DP 311 Introduction to Data Processing Systems 3 2 4

Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers, prerequisite to the detail study of particular computer problems. This course is a prerequisite for all programming courses.

Prerequisite: None.

BUS 361 Office Machines 2 2 3

Instructions in the operation of the bookkeeping-accounting machines, card punch, card verifier, and the dictating and transcribing machines.

Prerequisite: BUS 360.

FIFTH QUARTER

ENG 304 Communicative Skills: Speech 2 0 2

Technical speech to develop the speaking skills with emphasis on the dual role of communications as both a speaking and listening skill. Stress is placed on growth in poise and confidence of the student. Practice through individual speeches and group discussion. Recordings are made of the student's voice and used as an aid in speech development.

Prerequisite: ENG 307.

BUS 340 Secretarial Procedures 3 0 3

Designed to acquaint the student with the responsibilities encountered by a secretary during the workday. These include the following: receptionist duties, filing, handling the mail, telephone techniques, travel information, telegrams, office records, purchasing of supplies, office organization, and insurance claims.

Prerequisite: None.

SOC 310 Applied Psychology 3 0 3

This course stresses the procedures of building an efficient, enthusiastic business team and deals with the nature of the problems which arise in business organizations. The individual and his behavior are discussed, as well as the problems of influence and authority.

Prerequisite: None.

BUS 366 Budget and Record Keeping 3 0 3

The basic principles, methods, and procedures for preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning.

Prerequisite: BUS 320.

SIXTH QUARTER

BUS 371 Office Management 3 0 3

Presents the fundamental principles of office management. Emphasis on the role of office management; office automation; planning, controlling, organizing and actuating in office management.

Prerequisite: BUS 340.

Elective**

OPTION EXECUTIVE SECRETARY

COURSE TITLE		Course Class	Hours Per Week Lab.	Quarter Hours Credit
THIRD QUARTER				
BUS	383E Terminology and Vocabulary	3	0	3
FOURTH QUARTER				
BUS	356E Dictation and Transcription (Business)	3	2	4
BUS	350E Advanced Typewriting (Business)	1	4	3
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		7	6	10
FIFTH QUARTER				
BUS	357E Dictation and Transcription (Business)	3	2	4
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		6	2	7
SIXTH QUARTER				
BUS	370E Office Application (Business)	6	0	6
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		9	0	9

** Elective courses must be selected from the associate degree curriculum. The institution may elect to require certain courses or may let the student have a free elective.

EXECUTIVE SECRETARY COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE		Course Class	Hours Per Week Lab.	Quarter Hours Credit
THIRD QUARTER				
BUS	383E Terminology and Vocabulary (Business)	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: BUS 307.				
FOURTH QUARTER				
BUS	356E Dictation and Transcription (Business)	3	2	4
Develops the skills of taking dictation and transcribing materials appropriate to the course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Prerequisite: BUS 308.				
BUS	350E Advanced Typewriting (Business)	1	4	3
Emphasis is placed on the development of individual production rates. The student learns the techniques needed in planning and typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter				

forms, methods of duplication, statistical tabulation, reports and manuscripts.

Prerequisite: BUS 304.

Elective**

FIFTH QUARTER

BUS 357E Dictation and Transcription (Business) **3** **2** **4**

Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of business, technical and professional offices.

Prerequisite: BUS 356.

Elective**

SIXTH QUARTER

BUS 370E Office Application (Business) **6** **0** **6**

During the sixth quarter only, students are assigned to work in a business, technical, or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the course of study.

Prerequisite: BUS 361.

Elective**

OPTION ENGINEERING AND TECHNICAL SECRETARY

COURSE TITLE		Course Class	Hours Per Week Lab.	Quarter Hours Credit
THIRD QUARTER				
BUS 383T	Terminology and Vocabulary (Technical)	3	0	3
FOURTH QUARTER				
BUS 356T	Dictation and Transcription (Technical)	3	2	4
BUS 350T	Advanced Typewriting (Technical)	1	4	3
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		7	6	10
FIFTH QUARTER				
BUS 357T	Dictation and Transcription (Technical)	3	2	4
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		6	2	7
SIXTH QUARTER				
BUS 370T	Office Application (Technical)	6	0	6
BUS 358T	Dictation and Transcription (Technical)	3	2	4
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		12	2	13

** Elective courses must be selected from the associate degree curriculum. The institution may elect to require certain courses or may let the student have a free elective.

OPTION ENGINEERING AND TECHNICAL SECRETARY COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE	Course Class	Hours Per Week Lab.	Quarter Hours Credit
THIRD QUARTER			
BUS 383T Terminology and Vocabulary (Technical)	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: BUS 307.			
FOURTH QUARTER			
BUS 356T Dictation and Transcription (Technical)	3	2	4
Develops the skills of taking dictation and transcribing materials appropriate to the course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Prerequisite: BUS 308.			
BUS 350T Advanced Typewriting (Technical)	1	4	3
Emphasis is placed on the development of individual production rates. The student learns the techniques needed in planning and typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter forms, methods of duplication, statistical tabulation, reports and manuscripts. Prerequisite: BUS 304.			
Elective**	3	0	3
FIFTH QUARTER			
BUS 357T Dictation and Transcription (Technical)	3	2	4
Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of business, technical and professional offices. Prerequisite: BUS 356.			
Elective**	3	0	3
SIXTH QUARTER			
BUS 370T Office Application (Technical)	6	0	6
During the sixth quarter only, students are assigned to work in a business, technical, or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the course of study. Prerequisite: BUS 361.			
BUS 358T Dictation and Transcription (Technical)	3	2	4
Principally a speed building course, covering materials appropriate to the course of study, with emphasis on neatness as well as accuracy. Prerequisite: BUS 357.			
Elective**	3	0	3

OPTION LEGAL SECRETARY

COURSE TITLE		Course Class	Hours Per Week Lab.	Quarter Hours Credit
THIRD QUARTER				
BUS 383L	Terminology and Vocabulary (Legal)	3	0	3
FOURTH QUARTER				
BUS 356L	Dictation and Transcription (Legal)	3	2	4
BUS 350L	Advanced Typewriting (Legal)	1	4	3
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		7	6	10
FIFTH QUARTER				
BUS 357L	Dictation and Transcription (Legal)	3	2	4
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		6	2	7
SIXTH QUARTER				
BUS 370L	Office Application (Legal)	6	0	6
BUS 358L	Dictation and Transcription (Legal)	3	2	4
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		12	2	13

** Elective courses must be selected from the associate degree curriculum. The institution may elect to require certain courses or may let the student have a free elective.

LEGAL SECRETARY COURSE DESCRIPTIONS BY QUARTERS

THIRD QUARTER

BUS 383L Terminology and Vocabulary (Legal) 3 0 3

To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices.

Prerequisite: BUS 307.

FOURTH QUARTER

BUS 356L Dictation and Transcription (Legal) 3 2 4

Develops the skills of taking dictation and transcribing materials appropriate to the course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed.

Prerequisite: BUS 308.

BUS 350L Advanced Typewriting (Legal) 1 4 3

Emphasis is placed on the development of individual production rates. The student learns the techniques needed in planning and typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter forms, methods of duplication, statistical tabulation, reports and manuscripts.

Prerequisite: BUS 304.

Elective**

FIFTH QUARTER

BUS 357L Dictation and Transcription (Legal) 3 2 4

Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of business, technical and professional offices.

Prerequisite: BUS 356.

Elective** 3 0 3

SIXTH QUARTER

BUS 370L Office Application (Legal) 6 0 6

During the sixth quarter only, students are assigned to work in a business, technical, or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the course of study.

Prerequisite: BUS 361.

BUS 358L Dictation and Transcription (Legal) 3 2 4

Principally a speed building course, covering materials appropriate to the course of study, with emphasis on neatness as well as accuracy.

Prerequisite: BUS 357.

Elective** 3 0 3

OPTION MEDICAL SECRETARY SUGGESTED CURRICULUM BY QUARTERS

COURSE TITLE		Course Hours Per Week	Lab.	Quarter Hours Credit
		Class		
THIRD QUARTER				
BUS	383M Terminology and Vocabulary (Medical)	3	0	3
FOURTH QUARTER				
BUS	356M Dictation and Transcription (Medical)	3	2	4
BUS	350M Advanced Typewriting (Medical)	1	4	3
BUS	384M Terminology and Vocabulary (Medical)	3	0	3
		<hr/>	<hr/>	<hr/>
		10	6	13
FIFTH QUARTER				
BUS	357M Dictation and Transcription (Medical)	3	2	4
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		6	2	7
SIXTH QUARTER				
BUS	370M Office Application (Medical)	6	0	6
BUS	358M Dictation and Transcription (Medical)	3	2	4
Elective**		3	0	3
		<hr/>	<hr/>	<hr/>
		12	2	13

** Elective courses must be selected from the associate degree curriculum. The institution may elect to require certain courses or may let the student have a free elective.

MEDICAL SECRETARY COURSE DESCRIPTIONS BY QUARTERS

THIRD QUARTER

BUS 383M Terminology and Vocabulary (Medical) 3 0 3

To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices.

Prerequisite: BUS 307.

FOURTH QUARTER

BUS 356M Dictation and Transcription (Medical) 3 2 4

Develops the skills of taking dictation and transcribing materials appropriate to the course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed.

Prerequisite: BUS 308.

BUS 350M Advanced Typewriting (Medical) 1 4 3

Emphasis is placed on the development of individual production rates. The student learns the techniques needed in planning and typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter forms, methods of duplication, statistical tabulation, reports and manuscripts.

Prerequisite: BUS 304.

BUS 384M Terminology and Vocabulary (Medical) 3 0 3

Greater emphasis on an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices.

Prerequisite: BUS 383.

FIFTH QUARTER

BUS 357M Dictation and Transcription (Medical) 3 2 4

Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of business, technical and professional offices.

Prerequisite: BUS 356.

SIXTH QUARTER

BUS 370M Office Application (Medical) 6 0 6

During the sixth quarter only, students are assigned to work in a business, technical, or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the course of study.

Prerequisite: BUS 361.

BUS 358M Dictation and Transcription (Medical) 3 2 4

Principally a speed building course, covering materials appropriate to the course of study, with emphasis on neatness as well as accuracy.

Prerequisite: BUS 357.

CATAWBA VALLEY TECHNICAL INSTITUTE

TRADE DIVISION PROGRAMS OF STUDY

Auto Mechanics	—4 qtrs.
Electrical Installation & Maintenance	—3 qtrs.
Knitting Machine Fixing	—2 qtrs.
Machine Shop	—4 qtrs.
Masonry	—3 qtrs.
*Radio & TV Repair	—8 qtrs.
*Upholstery Sewing	—4 qtrs.
*Upholstery	—3 qtrs.

* Course meets only 3 hours per day.

AUTOMOTIVE MECHANICS

INTRODUCTION

Purpose of Curriculum

This curriculum provides a training program for developing the basic knowledge and skills needed to inspect, diagnose, repair or adjust automotive vehicles. Manual skills are developed in practical shop work. Thorough understanding of the operating principles involved in the modern automobile comes in class assignments, discussion, and shop practice.

Complexity in automotive vehicles increases each year because of scientific discovery and new engineering. These changes are reflected not only in passenger vehicles, but also in trucks, buses and a variety of gasoline-powered equipment. This curriculum provides a basis for the student to compare and adapt to new techniques for servicing and repair as vehicles are changed year by year.

CURRICULUM BY QUARTERS

			COURSE TITLE		Course Hours Per Week	Quarter
FIRST QUARTER			Class	Lab.	Shop Prac.	Hours Credit
AUTO	121	Automotive Engines	3	0	12	7
MA	120	Fundamentals of Mathematics	5	0	0	5
ENG	101	Reading Improvement	2	0	0	2
PHY	104	Applied Physics I	1	2	0	2
			<u>11</u>	<u>2</u>	<u>12</u>	<u>16</u>

SECOND QUARTER

AUTO	122	Automotive Electrical and Fuel Systems	3	0	12	7
PHY	105	Applied Physics II	1	2	0	2
ENG	102	Communication Skills	2	0	0	2
DD	121	Blueprint Reading	3	0	0	3
			<hr/> 9	<hr/> 2	<hr/> 12	<hr/> 14

THIRD QUARTER

AUTO	123	Automotive Chassis and Suspensions	3	0	12	7
AHR	101	Automotive Air Conditioning	3	0	0	3
SOC	101	Human Relations	2	0	0	2
MECH	112	Welding	0	0	3	1
PHY	106	Applied Physics III	1	2	0	2
			<hr/> 9	<hr/> 2	<hr/> 15	<hr/> 15

FOURTH QUARTER

AUTO	124	Automotive Power Train Systems	3	0	9	6
SOC	103	Management Procedures	3	0	0	3
AUTO	125	Automotive Servicing	3	0	9	6
			<hr/> 9	<hr/> 0	<hr/> 18	<hr/> 15

FIFTH QUARTER (DIESEL OPTION)

Dies	101	Diesel Engines	2	2	0	3
Dies	102	Diesel Fuel Systems	5	14	0	12
Dies	103	Diesel Engine Tune-Up and Trouble Shooting	3	4	0	5
			<hr/> 10	<hr/> 20	<hr/> 0	<hr/> 20

COURSE DESCRIPTIONS BY QUARTERS

		COURSE TITLE	Course	Hours	Per Week	Quarter
FIRST QUARTER			Class	Lab.	Shop Prac.	Hours Credit
AUTO 121	Automotive Engines		3	0	12	7

Development of a thorough knowledge and ability in using, maintaining, and storing the various hand tools and measuring devices needed in automotive repair work. Study of the construction and operation of components of automotive engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing.

Prerequisite: None.

MA	120	Fundamentals of Mathematics	5	0	0	5
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Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.

Prerequisite: None.

ENG	101	Reading Improvement	2	0	0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

PHY	104	Applied Physics I	1	2	0	2
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Introductory physics and its applications. Systems of measurement, theory of matter, properties of solids, liquids, and gases.

Prerequisite: None.

SECOND QUARTER

AUTO 122 Automotive Electrical and Fuel Systems

3 0 12 7

A thorough study of the electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment for the fuel and electrical system.

Prerequisite: AUTO 121.

PHY 105 Applied Physics II

1 2 0 2

Basic principles of electricity, types of electricity, and its production, transmission, and transformation. Such factors as the electron theory, electrical measurement, magnetism, electromagnetism, and the magnetic effects of electricity constitute major areas of study.

Prerequisite: PHY 104.

ENG 102 Communication Skills

2 0 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

Prerequisite: None.

DD 121 Blueprint Reading

3 0 0 3

Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, and wiring diagrams. Information on the basic principles of lines, views, dimensioning procedures, and notes.

Prerequisite: None.

THIRD QUARTER

AUTO 123 Automotive Chassis and Suspensions

3 0 12 7

Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of suspension, steering and braking systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, front end, types and servicing of brakes.

Prerequisite: AUTO 122.

AHR 101 Automotive Air Conditioning

3 0 0 3

General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system.

Prerequisite: PHY 105.

SOC 101 Human Relations

2 0 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

MECH 112 Welding	0	0	3	1
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Welding demonstrations by the instructor and practice by students in the welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding; bronze welding, silver-soldering, and flame cutting methods applicable to mechanical repair work.

Prerequisite: None.

PHY 106 Applied Physics III	1	2	0	2
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Physical principles of force, energy, work and power; equilibrium and the laws of motion; principles of machines, mechanical advantage, and transmission of power in practical applications and the use of vectors and graphical presentations.

Prerequisites: PHY 104, MA 120.

FOURTH QUARTER

Principles and functions of automotive power train systems: clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair.

AUTO 124 Automotive Power Train Systems	3	0	9	6
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Prerequisites: PHY 105, PHY 106, AUTO 123.

SOC 103 Management Procedures	3	0	0	3
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An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

Prerequisite: None.

AUTO 125 Automotive Servicing	3	0	9	6
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Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Troubleshooting of automotive systems, providing a full range of testing, adjusting, repairing and replacing experiences.

Prerequisite: AUTO 123.

FIFTH QUARTER

DIES 101 Diesel Engines	2	2	0	3
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A study of principles and application of the various diesel engines.

DIES 102 Diesel Fuel Systems	5	14	0	12
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A study of the diesel engine principles—different injection systems, fuels and combustion, fuel systems, air intake systems, and governors.

DIES 103 Diesel Engine Tune-up and Trouble Shooting	3	4	0	5
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Rating and testing methods, use of modern testing equipment.

ELECTRICAL INSTALLATION AND MAINTENANCE

INTRODUCTION

Purpose of the Curriculum

The rapid expansion of the national economy and the increasing development of new electrical products is providing a growing need for qualified people to install and maintain electrical equipment. By mid-1960 more than 350,000 were employed as either construction electricians or maintenance electricians. Between 5,000 and 10,000 additional tradesmen are required each year to replace those leaving the industry. It is expected that the total requirements for electrical tradesmen will reach 500,000 by 1965 and 700,000 by 1970. The majority of the electrical tradesmen today are trained through apprenticeship or on-the-job training programs.

This curriculum guide will provide a training program in the basic knowledge, fundamentals, and practices involved in the electrical trades. A large portion of the program is devoted to laboratory and shop instruction which is designed to give the student practical knowledge and application experience in the fundamentals taught in class.

CURRICULUM BY QUARTERS

		COURSE TITLE	Course Class	Hours Per Week	Lab. Shop Prac.	Quarter Hours Credit
FIRST QUARTER						
MA	125	Electrical Math	5	0	0	5
ELEC	212	Direct and Alternating Current	7	8	3	12
ENG	101	Reading Improvement	2	0	0	2
			14	8	3	19
SECOND QUARTER						
ELEC	123	Alternating Current and Direct Current Machines and Controls	5	10	0	10
DD	120	Building Trades Blueprint Reading and Sketching	5	0	0	5
ENG	102	Communication Skills	2	0	0	2
IOC	101	Human Relations	2	0	0	2
			14	10	0	19

THIRD QUARTER

ELEC	124	Residential Wiring	5	0	9	8
ELN	118	Industrial Electronics I	4	4	0	6
SOC	103	Management Procedures				
		or				
ISc	102	Industrial Organizations	3	0	0	3
			<u>12</u>	<u>4</u>	<u>9</u>	<u>17</u>

FOURTH QUARTER

ELEC	125	Commercial and Industrial Wiring	5	0	9	8
ELN	119	Industrial Electronics II	5	6	0	8
			<u>10</u>	<u>6</u>	<u>9</u>	<u>16</u>

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
FIRST QUARTER			Class	Lab.		Shop Prac.	Hours Credit
MA	125	Electrical Math	5	0		0	5

A study of fundamental concepts of algebra; basic operations of addition, subtraction, multiplication, and division; solution of first order equations, use of letters and signs, grouping, factoring, exponents, ratios, and proportions; solution of equations, algebraically and graphically; a study of logarithms and use of tables; an introduction to trigonometric functions and their application to right angles; and a study of vectors for use in alternating current.

Prerequisite: None.

ELEC	122	Direct and Alternating Current	7	8		3	12
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A study of the electrical structure of matter and electron theory, the relationship between voltage, current, and resistance in series, parallel, and series-parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchhoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits.

Prerequisite: None.

ENG	101	Reading Improvement	2	0		0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and the principles of vocabulary building are stressed.

Prerequisite: None.

SECOND QUARTER

ELEC	123	Alternating Current and Direct Current Machines and Controls	5	10		0	10
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Provides fundamental concepts in single and polyphase alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the

use of electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type control used in small appliances, such as: thermostats, times, or sequencing switches.

Prerequisites: ELEC 122, MA 125.

DD 120 Building Trades Blueprint Reading and Sketching	5	0	0	5
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Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches.

Prerequisite: None.

ENG 102 Communication Skills	2	0	0	2
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Development of the ability to communicate effectively with other individuals through the medium of good language usage in speaking and writing, to think more clearly, and to reason more forcefully in work problems pertaining to his job.

Prerequisite: None.

SOC 101 Human Relations	2	0	0	2
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Assistance in acquiring greater understanding of relation with other people through learning and applying some of the basic principles of human psychology. A study of the problems of the individual and his work situation in relation to the established organization of modern business and industry and in relation to government practices and labor organizations, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

THIRD QUARTER

ELEC 124 Residential Wiring	5	0	9	8
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Provides instruction and application in the fundamentals of blueprint reading, planning, layout, and installation of wiring in residential applications, such as: services, switch boards, lighting, fusing, wire sizes, branch circuits, conduits, National Electrical Code regulations in actual building mock-ups.

Prerequisites: ELEC 123, DD 120.

ELN 118 Industrial Electronics I	4	4	0	6
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Basic theory, operating characteristics, and application of vacuum tubes, such as: diodes, triodes, tetrodes, pentodes, and gaseous control tubes. An introduction to amplifiers using triodes, power supplies using diodes, and other basic applications.

Prerequisite: ELEC 123.

SOC 103 Management Procedures	3	0	0	3
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Development of procedures to familiarize the prospective businessman with the many important functions that must be carried on in the operations of a small business or enterprise. An introduction to the business world; problems of small business operation; basic business law, forms, and records; financial, ordering, and inventory problems; layout of equipment and offices; and methods of improving business and employer-employee relations.

Prerequisite: None.

ISc 102 Industrial Organizations 3 0 0 3

Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost.

Prerequisite: None.

FOURTH QUARTER

ELEC 125 Commercial and Industrial Wiring 5 0 9 8

Layout, planning, and installation of wiring systems in commercial and industrial complexes, with emphasis upon blueprint reading and symbols, the related National Electrical Codes, and the application of the fundamentals to practical experience in wiring, conduit preparation, and installation of simple systems.

Prerequisites: ELN 118, ELEC 124.

ELN 119 Industrial Electronics II 5 6 0 8

Basic industrial electronic systems, such as: motor controls, alarm systems, heating systems and controls, magnetic amplifier controls, welding control systems using thyatron tubes, and other basic types of systems commonly found in most industries.

Prerequisite: ELN 118.

KNITTING MACHINE FIXING

TRADE PREPARATORY

This is a 2 quarter course if taken 6 hours per day or 4 quarters if taken 3 hours per day. It is designed to give the student a comprehensive knowledge of the knitter fixing trade. The student will master the basic skills of machine fixing on different types of machines, tools, and repair operations. Listed below are some of the main points of instruction:

Mill Relationship	Replacement of Parts and
Mill Safety	Attachments, Purpose
Stitch Formation	Identify Parts
Machines	Driving Mechanism
Make Up	Main Drum
Top	Stripper Drum
Body	Dismantling and putting
Heel	together of machines
Feet	Trouble shooting
Ring Toe and Toe	Fundamentals of Pattern
Looper Line and Clip	Making

OPTION — DYEING AND BLEACHING

The purpose of this program is to train personnel for various positions in dyeing up to a dyeing overseer.

Six hours of instruction are offered per week. Classes begin with the fall quarter.

HOURS INVOLVED IN DYEING AND BLEACHING COURSE ARRANGEMENT BY QUARTERS

SUBJECT	1st Quarter	2nd Quarter	3rd Quarter	Total
Dyeing and Bleaching	33 hours	22 hours	55 hours	110 hours
Chemistry	22 hours	22 hours		44 hours
Math — Physics	11 hours	22 hours		33 hours
				<hr/> 187 hours

OPTION — TOE SEAMING

2 weeks — 60 Hours

MACHINIST TRADE

INTRODUCTION

Purpose of Curriculum

This curriculum was prepared to meet a definite need for training of machinists. Surveys recently completed in North Carolina show that many of the existing industries lack time and facilities for training enough machinists to meet present and planned needs. Expanding industries already located in our State and new industries under development invariably express the need for skilled craftsmen who have the background knowledge and potential to advance.

This guide is designed to give learners the opportunity to acquire basic skills and the related technical information necessary to gain employment and build a profitable career in the machine shop industry in the State. It is comprised of the joint views of committees responsible for its development.

CURRICULUM BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
			Class	Lab.		Shop	Hours
						Prac.	Credit
FIRST QUARTER							
MECH	121	Machine Shop Theory and Practice	3	0		12	7
MA	120	Fundamentals of Mathematics	5	0		0	5
DD	122	Blueprint Reading	5	0		0	5
ENG	101	Reading Improvement	2	0		0	2
			15	0		12	19
SECOND QUARTER							
MECH	122	Machine Shop Theory and Practice	3	0		12	7
MA	123	Machinist Mathematics	5	0		0	5
DD	123	Blueprint Reading	3	0		0	3
PHY	104	Applied Physics I	1	2		0	2
ENG	102	Communication Skills	2	0		0	2
			14	2		12	19
THIRD QUARTER							
MECH	123	Machine Shop Theory and Practice	3	0		12	7
MECH	124	Structure of Metals	3	2		0	4
PHY	105	Applied Physics II	1	2		0	2
SOC	101	Human Relations	2	0		0	2
			9	4		12	15
FOURTH QUARTER							
MECH	125	Machine Shop Theory and Practice	3	0		12	7
ISc	101	Industrial Specifications	2	0		0	2
MECH	111	Oxyacetylene Welding	2	0		3	3
MECH	126	Heat Treating Practice	0	0		3	1
ISc	102	Industrial Organizations	3	0		0	3
			10	0		18	16

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE		Course	Hours	Per	Week	Quarter
		Class	Lab.		Shop Prac.	Hours Credit
FIRST QUARTER						
MECH 121	Machine Shop Theory and Practice	3	0		12	7
An introduction to the machinist trade and the potential it holds for the craftsman. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice.						
Prerequisite: None.						
MA 120	Fundamentals of Mathematics	5	0		0	5
Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.						
Prerequisite: None.						
DD 122	Blueprint Reading	5	0		0	5
Interpretation and reading of blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes.						
Prerequisite: None.						
ENG 101	Reading Improvement	2	0		0	2
A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.						
Prerequisite: None.						
SECOND QUARTER						
MECH 122	Machine Shop Theory and Practice	3	0		12	7
Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine and shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course.						
Prerequisite: MECH 121.						
MA 123	Machinist Mathematics	5	0		0	5
Fundamental geometric concepts and construction of plane and solid figures, surface and volume measurements, and related problems; introduction to trigonometry of the right triangle. Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems.						
Prerequisite: MA 120.						

DD 123 Blueprint Reading 3 0 0 3

Further practice in interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes.

Prerequisite: DD 122.

PHY 104 Applied Physics I 1 2 0 2

Introductory physics and its applications. Systems of measurement, theory of matter, properties of solids, liquids, and gases.

Prerequisite: None.

ENG 102 Communication Skills 2 0 0 2

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

Prerequisite: None.

THIRD QUARTER

MECH 123 Machine Shop Theory and Practice 3 0 12 7

Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculating, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder.

Prerequisites: MECH 121, MECH 122.

MECH 124 Structure of Metals 3 2 0 4

Elementary and practical approach to metals, their structure, markings, classifications and uses. Interpretation of properties and specifications of steels by use of manuals, catalogs, charts, etc.

Prerequisite: None.

PHY 105 Applied Physics II 1 2 0 2

Basic principles of electricity, types of electricity, and its production, transmission, and transformation. Such factors as the electron theory, electrical measurement, magnetism, electromagnetism, and the magnetic effects of electricity constitute major areas of study.

Prerequisite: PHY 104.

SOC 101 Human Relations 2 0 0 2

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

FOURTH QUARTER

MECH 125 Machine Shop Theory and Practice 3 0 12 7

Development of class projects using previously learned procedures in planning, blue-print reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry.

Prerequisites: MECH 121, MECH 122, MECH 123.

ISc 101 Industrial Specifications 2 0 0 2

Organizing and studying machine tool and hand tool specifications, job sheets and procedure sheets. Catalogs, specification sheets, and manufacturer's handbooks serve as reference sources.

Prerequisite: None.

MECH 111 Oxyacetylene Welding 2 0 3 3

Basic welding procedures and practice. The trainee will gain experience in the gas welding of small parts and tools. This course will present gas welding as it may be used by the machinist in the repair and manufacture of tools and equipment.

Prerequisite: None.

MECH 126 Heat Treating Practice 0 0 3 1

Working knowledge of the methods of treating ferrous and nonferrous metals. The effects of hardening, tempering, and annealing upon the structure and physical properties of metals. Trainees will be given the opportunity to acquaint themselves with the equipment and processes of heat treating.

Prerequisite: MECH 124.

ISc 102 Industrial Organizations 3 0 0 3

Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost.

Prerequisite: None.

MASONRY

This course provides a comprehensive knowledge of masonry. The student will get the related mathematics and blueprint reading, which will enable him to do a good job. The laboratory work will enable the student to apply his knowledge in developing his skills of the trade.

CURRICULUM BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
			Class	Lab.		Shop	Hours
						Prac.	Credit
FIRST QUARTER							
MAS	111	Bricklaying I	3	0		6	3
MA	120A	Fundamentals of Math	3	0		0	3
DD	120A	Building Trades Blueprint Reading and Sketching	3	0		0	3
			<u>9</u>	<u>0</u>		<u>6</u>	<u>11</u>
SECOND QUARTER							
MAS	112	Bricklaying II	5	0		6	7
MA	120B	Fundamentals of Math	2	0		0	2
DD	120B	Building Trades Blueprint Reading and Sketching	2	0		0	2
			<u>9</u>	<u>0</u>		<u>6</u>	<u>11</u>
THIRD QUARTER							
MAS	113	General Masonry	4	0		6	6
MAS	114	Estimating	2	0		0	2
DD	126	Blueprint Reading for Masons	3	0		0	3
			<u>9</u>	<u>0</u>		<u>6</u>	<u>11</u>

DESCRIPTIONS BY QUARTERS

COURSE TITLE		Course	Hours	Per	Week	Quarter
		Class	Lab.		Shop	Hours
					Prac.	Credit
FIRST QUARTER						
MAS 111	Bricklaying I	3	0		6	3
The history of the bricklaying industry. Clay and shell brick, mortar, laying foundations, laying bricks to a line, bonding, and tools and their uses. Laboratory work will be in practical application of bricklaying.						
MA 120A	Fundamentals of Math	3	0		0	3
Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth.						
DD 120A	Building Trades Blueprint Reading and Sketching	3	0		0	3
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches.						

SECOND QUARTER

MAS 112 Bricklaying II 5 0 6 7

Designed to give the student practical applications of that information in mortar for walls, chimneys, foundations, expansion strips, wall ties, calking, cutting limestone, starting of bonds, construction of arches, cavity wall construction.

MA 120B Fundamentals of Math 2 0 0 2

A continuation of MA 120A.

**DD 120B Building Trades Blueprint
Reading and Sketching** 2 0 0 2

Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches.

THIRD QUARTER

MAS 113 General Masonry 4 0 6 6

Layout and erection of reinforced grouted brick masonry lintels, story pole and batter boards, fireplaces, glazed tile, panels, decorative stone, granite, marble, adhesive terra cotta and modular walls with modular windows.

MAS 114 Estimating 2 0 0 2

Estimating concrete walls, concrete floors, concrete stairs, concrete walks, septic tanks, wood lath and lathing, plaster, stucco, rubble stone, adhesive terra cotta and quantities of modular masonry units.

DD 126 Blueprint Reading for Masons 3 0 0 3

Designed to develop abilities in reading complex drawings in the masonry field. Blueprints of residence or of commercial buildings will be studied with emphasis on the plot floor, basement and/or foundation floor and various detailed drawings of masonry work.

RADIO AND TELEVISION SERVICING

INTRODUCTION

Purpose of Curriculum

Within recent years improved electronic techniques have provided expanded entertainment and educational facilities in the form of monochrome and color television, frequency modulated radio, high fidelity amplifiers and stereophonic sound equipment. These developments require expanded knowledge and skill of the individual who would qualify as a competent and up-to-date serviceman.

This curriculum guide provides a training program which will provide the basic knowledge and skills involved in the installation, maintenance and servicing of radio, television and sound amplifier system. A large portion of time is spent in the laboratory verifying electronic principles and developing servicing techniques.

CURRICULUM BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
FIRST QUARTER			Class	Lab.		Shop Prac.	Hours Credit
MA	125	Electrical Mathematics	5	0		0	5
ELEC	122	Direct and Alternating Current	7	8		3	12
ENG	101	Reading Improvement	2	0		0	2
			<hr/>	<hr/>		<hr/>	<hr/>
			14	8		3	19
SECOND QUARTER							
ELN	122	Vacuum Tubes and Circuits	5	10		0	10
ELN	132	Amplifier Systems	2	0		6	4
ENG	102	Communication Skills	2	0		0	2
SOC	101	Human Relations	2	0		0	2
			<hr/>	<hr/>		<hr/>	<hr/>
			11	10		6	18
THIRD QUARTER							
ELN	124	Vacuum Tubes and Circuits	4	4		0	6
ELN	125	Radio Receiver Servicing	2	0		6	4
ELN	126	Transistor Theory and Circuits	5	4		0	7
SOC	103	Management Procedures	3	0		0	3
			<hr/>	<hr/>		<hr/>	<hr/>
			14	8		6	20

FOURTH QUARTER

ELN	127	Television Receiver Circuits and Servicing	10	0	15	15
	or		<u>10</u>	<u>0</u>	<u>15</u>	<u>15</u>
ELN	128	Television Receiver Circuits and Servicing	5	0	12	9
		Elective (1)	5	0	6	7
			<u>10</u>	<u>0</u>	<u>18</u>	<u>16</u>

ELECTIVE

ELN	129	Single Side-band Systems	5	0	6	7
ELN	130	Two-way Mobile Maintenance	5	0	6	7

COURSE DESCRIPTIONS BY QUARTERS

COURSE TITLE			Course	Hours	Per	Week	Quarter
FIRST QUARTER			Class	Lab.		Shop Prac.	Hours Credit

MA	125	Electrical Mathematics	5	0	0	5
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An introductory algebra course with trigonometry and vectors needed in alternating current: algebraic operations of addition, subtraction, multiplication and division; use of letters and signs, grouping, factoring; exponents, ratios and proportions; algebraic and graphic solutions of first-degree equations; introduction to trigonometric functions, their graphs and applications to right triangles. Addition, subtraction and resolution of vector quantities.

Prerequisite: None.

ELEC	122	Direct and Alternating Current	7	8	3	12
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A study of the structure of matter and the electron theory, the relationship between voltage, current and resistance in series, parallel and series-parallel circuits. Analysis of direct current circuits by Ohm's law and Kirchhoff's law; sources of direct current potentials. Fundamental concepts of alternating current flow; a study of reactance, impedance, phase angle, power and resonance and alternating current circuit analysis.

Prerequisite: None.

ENG	101	Reading Improvement	2	0	0	2
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A concentrated effort to improve the student's ability to comprehend what he reads by training him to read more rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition, and to train for comprehension in larger units. Reading faults of the individual are analyzed for improvement, and principles of vocabulary building are stressed.

Prerequisite: None.

SECOND QUARTER

ELN	122	Vacuum Tubes and Circuits	5	10	0	10
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An introduction to vacuum tubes and their development; the theory, characteristics and operation of vacuum diodes, semi-conductor diodes, rectifier circuits, filter circuits, triodes and simple voltage amplifier circuits.

Prerequisites: ELEC 122, MA 125.

ELN 123 Amplifier Systems**2 0 6 4**

An introduction of commonly used servicing techniques as applied to monophonic and stereophonic high fidelity amplifier systems and auxiliary equipment. The operation and servicing of inter-communication amplifiers and switching circuits will also be taught.

Prerequisites: MA 125, ELEC 122.

ENG 102 Communication Skills**2 0 0 2**

Development of ability to communicate effectively through the medium of good language usage in speaking and writing. Organizing thoughts, and presenting thoughts effectively in connection with problems.

Prerequisite: None.

SOC 101 Human Relations**2 0 0 2**

Development of understanding of relationships to other persons through some of the basic principles of human psychology. The problems of the individual and his work situation are studied in relation to the established organization of modern business and industry and in relation to government practices and labor organization, with special emphasis on the operating responsibilities of good management.

Prerequisite: None.

THIRD QUARTER**ELN 124 Vacuum Tubes and Circuits****4 4 0 6**

A continuing study of tubes and circuits; the theory, characteristics, and operation of the tetrode and pentode tubes, voltage and power amplifiers, tunable RF amplifiers, oscillators and demodulator circuits.

Prerequisites: ELN 123, ELN 122.

ELN 125 Radio Receiver Servicing**2 0 6 4**

Principles of radio reception and practices of servicing; included are block diagrams of radio receivers, servicing techniques of AM and FM receivers by resistance measurements, signal injection, voltage analysis, oscilloscope methods of locating faulty stages and components and the alignment of AM and FM receivers.

Prerequisite: ELN 123, ELN 122.

ELN 126 Transistor Theory and Circuits**5 4 0 7**

Transistor theory, operation, characteristics and their application to audio and radio frequency amplifier and oscillator circuits.

Prerequisite: ELN 123.

SOC 103 Management Procedures**3 0 0 3**

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations.

Prerequisite: None.

FOURTH QUARTER

ELN 127 Television Receiver Circuits and Servicing

10 0 15 15

A study of principles of television receivers, alignment of radio and intermediate frequency amplifiers, adjustment of horizontal and vertical sweep circuits will be taught. Techniques of troubleshooting and repair of TV receivers with the proper use of associated test equipment will be stressed. Additional study of more specialized servicing techniques and oscilloscope waveform analysis will be used in the adjustment, troubleshooting and repair of the color television circuits.

Prerequisites: ELN 126, ELN 125.

ELN 128 Television Receiver Circuits and Servicing

5 0 12 9

This course, taught in conjunction with an elective, will be a shortened version of ELN 127.

Prerequisites: ELN 126, ELN 125.

ELECTIVE:

ELN 129 Single Side-band Systems

5 0 6 7

An introductory course of single side-band transmission system with carrier frequency or without and the associated balanced modulator of phasing system used to produce this type of transmission. Time will be allotted also to the necessary circuitry in the receiver to receive this type transmission.

Prerequisites: ELN 126, ELN 125.

ELN 130 Two-way Mobile Maintenance

5 0 6 7

A course to acquaint the student with the theory and maintenance of fixed station and mobile station transmitters and receivers. Except for radio laws, sufficient information will be given to qualify the student to take the FCC second class radio-telephone license examination.

Prerequisites: ELN 126, ELN 125.

SEWING (Furniture Fabric)

In this course the student has an opportunity to learn to operate the sewing machine, to sew material in order to have proper fitting of patterns and to match fabrics. The purpose is to learn the fundamentals of sewing operations so that speed and production may be attained. The length of the course is 2 quarters.

The student will learn the following:

1. Basic knowledge of the sewing machine
 - a. How to thread a machine
 - b. How and when to change stitches
 - c. How to change needles
 - d. How and when to adjust tension
2. Understanding pieces to be sewn
 - a. Understanding cutter's marks
 - b. Where and why to sew pulls
 - c. Where and why to sew welts
 - d. How to sew welts
 - e. How to French seam (top stitch)
 - f. How to match stripes
3. Sewing the loose cushion
 - a. Learning the importance of exact seaming
 - b. How to apply boxing to face of cushion to sew
 - c. How to join boxing
 - d. How to match stripes on boxing and face
 - e. How to finish cushion
4. Sewing skirts—Flounces
 - a. Learning to sew box-pleat skirt
 - b. Learning to line box-pleat skirt
 - c. Learning to sew flounces

UPHOLSTERY

This course runs 3 quarters and is set up to give the student an opportunity to learn the skills involved in upholstery. The course covers various styles and types of furniture and gives practical experience in the construction, springing up and period of history of the frame to be upholstered.

The student will learn to do the following:

1. Spit tacks—hammer technique
2. Arrange and secure filler and padding
 - a. Sewing large stitches across surface of fabric covering of springs and working filler under stitches to form holding base.
 - b. Spreading more filler over surface and placing cover filler, sewing it to bottom fabric.
 - c. Placing additional filler on top of cover and covering padded sections with unbleached muslin, tacking muslin to frame.
 - d. Arranging layer of cotton wadding over muslin cover for smoother finish.
3. Cover padded frame with upholstery fabric
 - a. Selecting previously cut fabric, partially stitched, and aligning and smoothing it in place over cotton wadding.
 - b. Tacking cover to form in key spots to hold it temporarily.
 - c. Sewing sections of cover which have been left unstitched with invisible lockstitches.
 - d. Strengthening and tacking edges of cover tightly and evenly to frame.
 - e. Untacking covering in places and inserting regulator to smooth out lumpy padding, then permanently tacking.
 - f. Trimming covering around legs and uprights to make a neat fit.

- g. Tacking or gluing gimp over seams to cover rough edges and tack heads.
 - h. Sewing or tacking on ornamental braid, buttons, or tassels.
- 4. Making and tying buttons
 - 5. History of furniture, periods
 - 6. Tools and equipment
 - 7. Springing up
 - 8. Body Work
 - 9. Stuffing
 - 10. Covers
 - 11. Tufting and buttoning



CATAWBA VALLEY TECHNICAL INSTITUTE
HICKORY, NORTH CAROLINA



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CATAWBA VALLEY TECHNICAL INSTITUTE
Hickory, North Carolina



CATALOG

1966-67

1967-68

Volume VI, No. 1

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ACADEMIC CALENDAR

1966-1967

FALL QUARTER

Registration	Sept. 6, 7
Classes Begin	Sept. 8
Last Date For Registration	Sept. 14
Classes End	Nov. 23
Thanksgiving Holidays	Nov. 24, 25

WINTER QUARTER

Registration	Nov. 28, 29
Classes Begin	Nov. 30
Last Date For Registration	Dec. 6
Classes End	Feb. 24, '67
Christmas Holidays	Dec. 21-Jan. 1

SPRING QUARTER

Registration	March 1, 2
Classes Begin	March 6
Last Date For Registration	March 12
Classes End	May 23
Easter Holidays	March 24, 27

SUMMER QUARTER

Registration	June 5, 6
Classes Begin	June 7
Last Date For Registration	June 13
Classes End	August 23
Holiday	July 4

1967-1968

(TENTATIVE)

FALL QUARTER

Registration	Sept. 5, 6, '67
Classes Begin	Sept. 7
Last Date For Registration	Sept. 13
Classes End	Nov. 22
Thanksgiving Holidays	Nov. 23, 24

WINTER QUARTER

Registration	Nov. 28, 29
Classes Begin	Nov. 30
Last Date For Registration	Dec. 6
Classes End	Feb. 23
Christmas Holidays	Dec. 22-Jan. 1

SPRING QUARTER

Registration	Feb. 28, 29
Classes Begin	March 4
Last Date For Registration	March 10
Classes End	May 21
Easter Holidays	April 12, 15

SUMMER QUARTER

Registration	June 3, 4
Classes Begin	June 5
Last Date For Registration	June 11
Classes End	August 21
Holiday	July 4

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ADMINISTRATION

BOARD OF TRUSTEES

HARRY M. ARNDT, *Chairman*

RALPH BOWMAN, *Vice-Chairman*

Adrian Shuford

Walker Geitner

Charles Grove

Frank M. Little

Cyril Long Mebane

Hubert Gilbert

Dr. James Price

Ben Brooks

Dr. Ira Bell

Bernard Brown

ADMINISTRATIVE STAFF

Robert E. Paap *President*

Marcus B. Simpson *Director, Technical and Vocational Program*

Bruce B. Bishop *Director of Student Personnel*

Ervin Lineberger *Student Counselor*

William D. Killian *Director of Evening Program*

Thomas W. Jameson *Business Manager*

Larry Penley *Director of Adult Education*

Maxine Bowman *Secretary to President*

Elizabeth Robinson *Bookkeeper*

Reita Lackey *Student Services Secretary*

Margaret Moretz *Student Services Secretary*

Linda Lytton *Secretary-Receptionist*

Blondell Westmoreland *Secretary*

Joyce York *Part-time Secretary*

GENERAL INFORMATION

PURPOSES

Catawba Valley Technical Institute was established to serve the people and industry of this area by providing a comprehensive post-high school educational program. Available are programs in technical, business, vocational-trade, adult education, upgrading, cultural and avocational courses. In addition, guidance services are available for both in-school and out-of-school citizens.

The Institute seeks to develop the skills, knowledge, abilities, and attitudes of each student for entry and progress within an occupational field. For employed persons courses are designed to upgrade and increase their present skills and knowledge.

Further, CVTI provides an opportunity for all adults to further their basic elementary and high school education, to create and develop cultural and avocational interests and to acquire knowledge and habits required for more effective citizenship and family living.



HISTORY

Catawba Valley Technical Institute, the ninth Industrial Education Center in North Carolina, is a state-county supported co-educational institution. It has served as a model for other Institutes throughout North Carolina and the surrounding states.

Ground was broken for CVTI in the fall of 1959 and construction was completed on the 40,000 square foot building in August, 1960. The ultra-modern building, one of the most efficient and complete in the state, represents an initial investment of approximately \$500,000.

Under the direction of President Robert Paap, the new building was put into operation in September 1960. From an initial enrollment of seventy-five (75) students during the first quarter, the enrollment has soared to an enrollment of some 500 full-time students in curriculum programs and ap

proximately 1,500 students each quarter in part-time extension and adult programs.

The school, which began operation as Catawba County Industrial Education Center, was elevated to the present status of Catawba Valley Technical Institute by the State Board of Education in January 1964. At that time, the Institute was authorized to award the Associate Degree in Applied Science (A.A. Sc.)

Construction on a 25,000 square-foot addition to the present building should be completed by the spring of 1967. Included will be additional classrooms, a student center, a drafting department, a health services area, and a new and enlarged library.

LOCATION

Catawba Valley Tech, located about half-way between Hickory and Newton on Highways 64-70-321, is in Catawba County, North Carolina.

Situated in the heart of the Piedmont some 1,500 feet above sea level, CVTI is easily accessible over Interstate 40, Highways 321, 60, 70, and 127. It is within seven miles of a major airport and approximately 50 miles from metropolitan Charlotte and the famous Blue Ridge Mountains.

CAMPUS AND FACILITIES

The Catawba Valley Technical Institute campus covers forty acres fronting Highways 64-70-321, four miles east of Hickory. The present campus includes two permanent buildings and four temporary structures for a total of more than 47,000 square feet of floor space. To meet growing enrollments greater than expected, seven additional temporary mobile units will be installed in 1966.

By Spring 1967, a 25,000 square foot expansion of the main building should be complete. This addition will provide new classrooms, a 14,000 volume library, drafting department, health services area, and student center.

Provisions have been made on campus to efficiently park in excess of 300 automobiles. Student facilities also include basketball, volleyball, and badminton courts, as well as a baseball diamond.

ACCREDITATION

CVTI is a member of the Department of Community Colleges of North Carolina. It is currently accredited by the North Carolina Board of Education. In addition, it has been fully approved by the Veterans Administration as well as the North Carolina Department of Vocational Rehabilitation.

Currently engaged in a self-study and evaluation, Catawba Valley Tech is working toward early recognition and accreditation by the Southern Association of Colleges and Secondary Schools.

ADMISSIONS

GENERAL

In keeping with the philosophy of Catawba Valley Technical Institute and the Department of Community Colleges, current admissions procedures reflect the "Open Door" policy. Unlike most colleges, the Institute does not impose restrictive standards for admittance.

Admission to CVTI as a school is open to practically all individuals 18 years of age or older. With a series of programs covering basic adult education (grades 1 through 8), high school subjects leading to a high school diploma, pre-curriculum preparatory courses, as well as technical, business, and trade training, CVTI will admit all applicants to the school.

An applicant, however, may not necessarily be immediately admitted to the program of his or her choice. Selected requirements must be met prior to admission to specific curriculums. Deficiencies can and must be made up prior to beginning the selected course of study. Deficiencies can be completed in courses available at CVTI. Thus, to some extent, quality can be retained in individual curricula and each applicant can be placed within a program in which he is capable of making satisfactory progress.

Before a student registers for a specific curriculum program, aptitude and placement tests are administered and counseling may be arranged. Thus an evaluation is made of the applicant's potential for success in the program of his choice.

SPECIFIC PROCEDURES

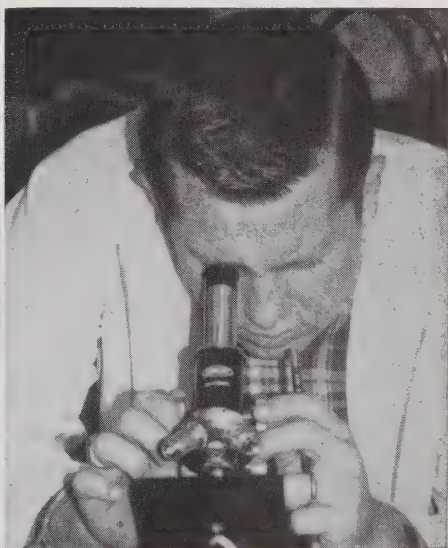
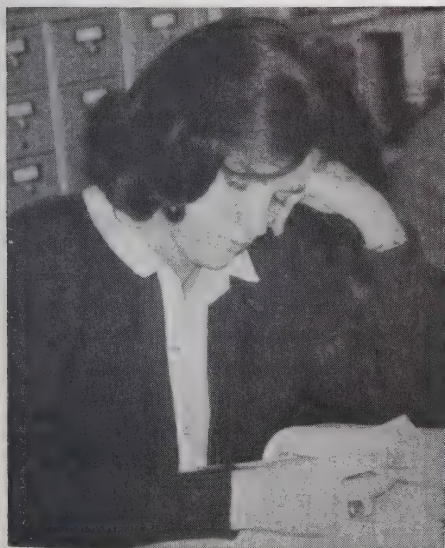
Each applicant is responsible for fulfilling the following steps to admission in a pre-employment technical, business, or trade program:

1. Complete and submit the standard application form (available from high school counselors or CVTI).
2. Complete the General Aptitude Test Battery administered by all North Carolina Employment Security Commission offices. Have the scores forwarded to Catawba Valley Technical Institute. (A battery of tests administered by the Institute may be substituted for the GATB.)
3. Submit transcripts of high school and post-high school education to the Institute.
4. Schedule, where deemed necessary, a personal interview with the Director of Student Personnel or/and the Counselor of CVTI.
5. Provide evidence of acceptable physical and mental health if deemed necessary. (A medical examination may be required at the discretion of the Administration.)

Upon receipt of the above information, data is thoroughly reviewed. If success appears possible and probable based upon (1) minimum aptitude test scores, (2) sufficient and compatible educational requirements, and (3) related personal information, the applicant is admitted to a selected course of study.

TECHNICAL PROGRAMS. Requirements for admission of a candidate to a regular two-year technology program include the qualifications listed above. In addition, preference is given the applicant who:

1. Is a high school graduate. (This requirement may be met by satisfactorily obtaining a North Carolina High School Equivalency Certificate or by completing the Adult High School Program available at CVTI.)
2. Has High School credit or the equivalent for two units of mathematics, one of which is algebra.
3. Has one unit or the equivalent of science other than biology.



BUSINESS PROGRAMS. Requirements for admission to the business programs include the qualifications listed under SPECIFIC PROCEDURES above. The applicant must also be a high school graduate. If not, the candidate must pass the North Carolina High School Equivalency Test or complete an Adult High Program (available at CVTI).

TRADE PROGRAMS. Requirements for admission to the trade preparatory curriculums and vocational programs include the qualifications listed under SPECIFIC PROCEDURES, above. In addition, it is recommended but not required that the applicant have at least one year of algebra.

Practical Nursing applicants must be high school graduates, pass the North Carolina High School Equivalency Test, or complete an adult High School Program (available at CVTI).

ADULT EDUCATION PROGRAMS. Admission to the basic adult education program, grades 1 through 8, is based upon stated need, previous school records, or demonstrated inability to function in high school courses.

Applicants seeking to enroll in the Adult High School program are admitted on the basis of (1) satisfactory completion of the basic adult program, or (2) satisfactory scores on selected achievement tests, or (3) evidence presented from the last school attended.

UPGRADING, EXTENSION, AND OTHER PROGRAMS. Admission to upgrading and updating courses is based upon the applicant's employment in the occupational field to which the course is related. Upon recommendation of an employer, exceptions may be made to this requirement.

Applicants for cultural and avocational course are accepted on the basis of stated interest.

Admission to special programs, such as New Industry Training, Firemanship Training, and Manpower Development Training Programs is based upon special requirement determined for each program.

TRANSFER

Catawba Valley Technical Institute will accept credits from all institutions within the Department of Community Colleges as well as from other accredited colleges, technical institutes, and vocational schools. Course grades of "C" or better only will be accepted and such courses must parallel the content of CVTI courses.

AUDITING

By special permission, an applicant may be admitted to certain courses as an auditor. Such students will receive no credit for the course(s). Auditors will be expected to attend classes and participate in the same manner as credit students. Fees for the auditing students will be identical to the credit fee.

NOTIFICATION OF ACCEPTANCE

Qualified applicants for each program will be accepted as admissions procedures are completed (on a first-come, first-served basis). Prospective students will be notified of their acceptance immediately after all required information is received.

FEES AND FINANCIAL AID

In keeping with its philosophy, Catawba Valley Technical Institute seeks to provide quality education and training at the lowest cost possible. Student tuition and fees cover only a minor part of the Institute's operating expenses. Additional monies required are obtained through tax funds from Catawba County, the State of North Carolina, as well as the Federal Government.

FEES

Registration (quarterly)	\$2.00
Tuition Per Quarter:	
Full-time student	30.00
Part-time student (per quarter credit hour)	2.50
Student Activity (Annually)	9.00
Library	.10
Graduation	10.00
Late Registration	5.00

For non-residents of the State of North Carolina tuition and registration fees are two and one-half times the amounts listed above.

Inasmuch as costs are so inexpensive, CVTI does not provide for the Installment payment of fees and charges.

No registration or tuition fees are charged students enrolling in Adult Education, Extension, Firemanship, or other special classes. Small charges in some instances, however, may be made for instructional materials and/or textbooks required in these classes.

REFUNDS

Catawba Valley Technical Institute follows the refund policy established by the Department of Community Colleges. Tuition refunds can be made only when the student is compelled to withdraw for unavoidable reasons. Under such circumstances, up to two-thirds of the student's quarterly tuition may be refunded, if official withdrawal is made within ten (10) calendar days after the beginning of the quarter. Under no circumstances will the \$2.00 registration fee be refunded.

Refunds for veterans will be made in accordance with the regulations of the Veterans Administration.

FINANCIAL AID

Student financial assistance in the form of scholarships and loans is increasing annually. Generally such aid is provided on the basis of need or scholarship or a combination of these factors.

Inquiries and requests for applications regarding **SCHOLARSHIPS** and/or **LOANS** should be directed to the Director of Student Personnel.

SECRETARIAL SCHOLARSHIPS. The Hickory Chapter of the National Secretaries Association has in the past awarded three scholarships valued at \$80 each. These awards are based upon scholarship, need, and recommendations.

AGRICULTURAL BUSINESS SCHOLARSHIPS. For students enrolling in the Agricultural Business Technology Program, two scholarships of \$100 each have been made available. Scholarship, financial need, and recommendations are the bases for these awards.

CATAWBA VALLEY HOSIERY CLUB SCHOLARSHIPS. Ten full scholarships valued at \$100 each are available to full-time students in the Knitting Machine Fixing Program. Applicants must be high school graduates and officially accepted by CVTI to be eligible for these scholarships.

CATAWBA VALLEY TECHNICAL INSTITUTE FACULTY GRANT-IN-AID. The Faculty of CVTI has made available a fund for providing grants-in-aid. Such grants are made on the basis of demonstrated financial need without consideration of scholastic standing.

VOCATIONAL STUDENT LOAN FUND. Using funds donated by the North Carolina Consumer Finance Association, the State Board of Education established the Vocational Student Loan Program. Students who demonstrate financial need may borrow up to \$300 annually. The interest rate is only 3½% and repayment begins one year following graduation.

COLLEGE FOUNDATION, INC. Catawba Valley Technical Institute is a member of College Foundation, Inc. Through this corporation, students may borrow up to \$1,000 yearly. The interest rate varies up to 6%, depending upon the actual source of monies borrowed.

THE ETTA BURKE PTA STUDENT LOAN FUND. Available through the North Carolina Congress of Parents and Teachers, Inc., qualified students may borrow up to \$300 per year. Interest is only 3% and repayment begins six months after termination of formal education.

WORK-STUDY PROGRAM. Under this program, a limited number of students may be employed on a part-time basis by the Institute. To be eligible, an applicant must be less than 21 years of age and need the earnings to commence or continue training on a full-time basis.

STUDENT LIFE

STUDENT PERSONNEL SERVICES

Student Personnel Services are a distinct and vitally important aspect in the development, administration, operation, and future planning of Catawba Valley Technical Institute. Such services are provided, however, primarily to effectively serve the student.

A definite program of services is offered to assist the student in satisfactorily selecting, entering, progressing within, and completing a program of study. In addition, the individual is provided numerous opportunities for personal development and social growth through a variety of planned activities. The following services are available.

COUNSELING. CVTI provides a professional, competent, and continuing counseling program. The purpose of this program is to assist students in solving academic, vocational, personal, and socio-economic problems. It is felt that this service is most valuable when requested by the student. Therefore, students needing assistance should initiate contacts with the Student Personnel Office.

TESTING. Most CVTI applicants complete the General Aptitude Test Battery administered by the North Carolina Employment Security Commission. The Institute, however, provides an extensive program of aptitude, achievement, and individual testing at the school.

ORIENTATION. All students enrolling in the fall quarter participate in student orientation. This program is designed to acquaint the student with the CVTI environment, policies, courses, philosophy, staff, and other students. Assemblies, open discussions, lectures, and student handbooks help prepare the student for beginning studies at Catawba Valley Tech.

PLACEMENT. Assistance in locating employment is available to all CVTI students and graduates. Qualified students are referred to employers contacting the Institute and the school provides facilities for employers desiring on-campus interviews.

Students are also urged to utilize the services of the Employment Security Commission which assists in job placement throughout the entire country.

HOUSING. Catawba Valley Technical Institute was established to serve students within commuting distance of the campus. Thus, CVTI has no dormitory or housing facilities on campus. Although the Institute assumes no responsibility for housing, assistance will be provided out-of-town stu-



dents in locating suitable living accommodations if requested through the Student Personnel Office.

Housing costs vary from \$20 per month up, depending upon location, conditions, availability of food and related factors.

FACULTY ADVISOR. Each student enrolled at Catawba Valley Technical Institute will be assigned an advisor. The basic purpose of this program is to provide each student personal assistance in orientation and progress throughout the time enrolled.

STUDENT CENTER

The initial phase of the facilities expansion program should be completed by the spring of 1967. In this new addition will be a modern, completely up-to-date Student Center.

The Center, a place to meet and eat, will be one of the focal points of social life on the campus. A snack bar, dining area, and game area will help fill leisure moments and relieve study pressures.

BOOKSTORE

The Institute operates a well-stocked bookstore at which all required books, supplies, and most tools are available. In addition other items of student interest are available. While operated primarily for the students, the store is open to the general public.

Except at times of registration, the bookstore is open only during scheduled hours. All sales are on a cash basis.

LIBRARY

Based upon book content, Catawba Valley Tech has one of the outstanding technical libraries in North Carolina. The development of a complete Learning Resource Center meeting the demands of all levels of learning is a prime goal of the Institute. The facilities to be completed in the spring of 1967 will provide new and considerably expanded library accommodations to house more than 14,000 volumes.

ACTIVITIES

To create an environment stimulating student interest, morale, and individual growth, CVTI supports and encourages a variety of activities supplementing the academic program.

In addition to major activities such as those listed below, additional clubs, debating teams, fall and spring dances, outings, and related activities are encouraged.



STUDENT GOVERNMENT. Each full-time curriculum student automatically is a member of the Student Government Association. The aims of this organization are to encourage student-faculty cooperation; provide democratic action in school activities; coordinate student activities; and maintain high standards for the school by upholding high personal standards of conduct.

The membership of the elected body consists of fifteen representatives elected from the student body at large.

STUDENT PUBLICATIONS. The CATVATECHI, the Catawba Tech yearbook, is a factual and photographic record of the curriculum students and their activities. Designed and prepared by the students, the CATVATECHI is published each spring. The student activity fee covers the cost of the yearbook.

The School Newspaper will become a major publication during the 1966-67 school year. It will be a student publication and will provide notice of significant developments and achievements.

CHORUS. For both male and female students with a background or interest in music, a student chorus is organized annually. In addition to special programs, performances are given at the annual graduation.

AGRI-TECH CLUB. The Agri-Tech Club, consisting of students within the Ag Business Department, promotes and encourages recognition and growth of Agri-Business opportunities.

ACADEMIC HONORS. Each quarter, the President of Catawba Valley Technical Institute recognizes and honors each student maintaining an academic average of 93.0 or above.

ATHLETICS. Athletic activities on campus are, by State policy, restricted to intramural activities. Scheduled play and tournaments in BASKETBALL, VOLLEYBALL, and SOFTBALL are planned. Limited facilities and equipment are available for FOOTBALL, BADMINTON, and other activities.

CVTI has also entered teams in nearby MUNICIPAL BASKETBALL AND SOFTBALL LEAGUES.

Other sports may be activated if sufficient interest is noted among students.

ATTENDANCE

All students are expected to be present and regular in attendance for all scheduled classes and school functions. Absences will be considered justified and excusable only in cases of emergencies, serious illness, or death in the immediate family.

Any work missed because of excused absences must be made up. Unexcused absences will result in a "O" for the work missed.

Three or more unexcused absences, whether consecutive or cumulative during any given quarter, may be justification for dismissal.

CONDUCT

Students will be expected to conduct themselves at all times as mature adults. Students who do not respect the rights and privileges and personal property of other students and who fail to demonstrate a high regard for school facilities and property will be subject to dismissal.

STUDENT TRANSPORTATION

The CVTI student body consists of commuting students. The location of the school creates numerous traffic problems and hazards. Students are, therefore, requested to be especially alert and careful in entering and leaving school grounds. The maximum on-campus speed is 15 miles per hour.

Areas on the campus have been designated for parking. Students are required to use these areas. Under no circumstances are students to park in front of the main building. Cars improperly parked may be towed away at the owner's expense.

SELECTIVE SERVICE DEFERMENT

Under present Selective Service regulations, students attending school on a full-time basis are draft exempt if maintaining satisfactory grades.

The Institute will assist students by notifying Selective Service Boards of enrollment and progress when requested to so do.

FACULTY AWARDS

The faculty of CVTI annually selects the outstanding male and female student who has contributed most to the Institute. An engraved plaque is awarded to each at graduation.

Also recognized at graduation by the Faculty are the students maintaining the highest academic average in the Diploma and Associate Degree programs respectively.



COMMENCEMENT MARSHALS

Commencement marshals are selected on the basis of scholastic averages from rising second-year students. The individual having the highest academic average after completing one year of studies will be designated chief marshal.

STUDENT EMPLOYMENT

More than one-half of the full-time students at Catawba Valley Technical Institute are employed either full-time or part-time. Insofar as possible student schedules will be arranged to eliminate conflicts with hours of employment. Students cannot ordinarily be excused from classes for reasons related to employment.

ACADEMIC STANDARDS

DEGREES, DIPLOMAS, AND CERTIFICATES

Catawba Valley Technical Institute awards the ASSOCIATE DEGREE in APPLIED SCIENCE (A.A. Sc.) upon completion of a two-year program of study in the technical or business areas.

Upon completion of a one-year program of study, CVTI grants a DIPLOMA in the major area of training.

CERTIFICATES are awarded for completing non-credit short courses and special programs.

ADULT HIGH SCHOOL DIPLOMAS are awarded by the cooperating Board of Education to students satisfactorily completing the Adult High School Program.

REGISTRATION

Students enrolling in credit courses are expected to register for course work on the day(s) specified for each quarter. Registration at other than the specified day and time subjects the student to a \$5.00 late registration fee.

No registrations are permitted in credit classes after the date listed in the school calendar.

Changes in schedules must be approved by the student's faculty advisor and arranged through the Student Personnel Office.

Registration for non-credit classes is usually held at the first class meeting for the course.

COURSE LOAD

Students enrolled for 12 or more quarter hours of credit applicable to their major will be considered full-time students. Students desiring to carry more than 21 credit hours must obtain permission from the Student Personnel Office.

GRADUATION REQUIREMENTS

GENERAL. Although CVTI provides counseling and advisement services, the student will be held responsible for fulfilling all requirements for the degree or diploma for which he is registered. It is also the student's responsibility to officially apply to the Student Personnel Office for his degree or diploma at the beginning of the last quarter the student is enrolled. The \$10.00 graduation fee must accompany the application.

Every candidate for an Associate Degree in Applied Science or a diploma must satisfy all of the requirements for the specific program from which he

is graduating. The minimum credit hours for the A.A. Sc. Degree is 108. The courses required in each program are listed elsewhere in this bulletin.

Candidates for graduation are required to participate in graduation exercises to receive the degree or diploma. Exceptions to this requirement may be made if justifiable reasons are presented in writing to the Student Personnel Office.

RESIDENCE. Students graduating from Catawba Valley Technical Institute must complete a minimum of one-half the required quarter hours at CVTI. The final fifteen credit hours of studies prior to graduation must be completed at the Institute.

GRADING SYSTEM

Grades will be issued at the end of each quarter. For unmarried students under 21 years of age, grades will be mailed to their parents. Grades for all others will be mailed to the student.

At the request of the student, grades will be provided employers or others providing financial aid.

The following numerical system will be used for all credit courses:

93-100	Excellent
86-92	Above Average
78-85	Average
70-77	Passing
Below 70	Failure
WP	Withdrawal Passing
WF	Withdrawal Failing
INC	Incomplete
AUD	Auditor (no credit)

In non-credit courses, an "S" will indicate satisfactory progress while a "U" will designate progress in an unsatisfactory manner.

INCOMPLETES. An Incomplete (INC) may be given only under extenuating circumstances as determined by the instructor. Such a grade must be removed by the end of the following quarter. If not removed within this time, the incomplete becomes a failure. Two or more incompletes in a quarter will ordinarily result in a reduced load the following quarter. Students with three or more incompletes may register for the following quarter by special permission only.

FAILURES. A failing grade cannot be removed from a student's record. When and if the course is repeated, the second grade is recorded as the

final grade for the course. Both grades will be used, however, in determining class rank or average.

WITHDRAWALS

Students desiring to withdraw from the Institute or from a specific course must officially withdraw through the Student Personnel Office.

Students failing to officially withdraw waive all re-entry privileges for one year and all grades for the quarter will be shown as failing.

A student who officially withdraws before the end of the seventh week of the quarter in which the course is normally completed will receive a grade of WP or WF depending upon whether the work is passing or failing at the time of withdrawal.

Students cannot officially withdraw from a course after the seventh week, except in emergency situations.

CREDIT

No degree, diploma, certificate, or course credit will be granted, nor will a transcript be furnished a student until all financial obligations to the Institute, other than student loans, have been paid.

All previously incurred expenses and accounts, including library fines, must be fully paid before a student may re-enter at the beginning of any quarter.

ACADEMIC PROBATION

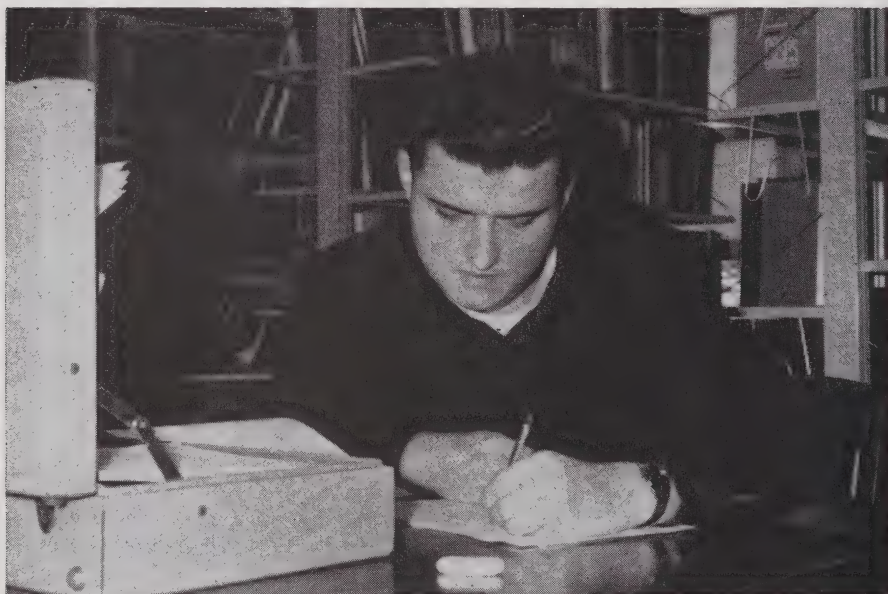
Regularly enrolled students are placed on ACADEMIC PROBATION for one quarter when their quarterly grade average falls below 72 or when they pass less than sixty (60) per cent of the credit hours attempted in the quarter.

A student who fails to maintain satisfactory academic progress two successive quarters may be asked to withdraw from CVTI. A student so asked may apply for re-admission after one quarter's postponement of studies. An individual re-admitted under these circumstances is automatically on probation. If suspended a second time, eligibility for re-entry is forfeited except by special permission of the Administrative Council.

PROGRAMS OF STUDY

The following pages list the programs or majors to be offered by Catawba Valley Technical Institute during the 1966-67 and 1967-68 school years. Programs other than those shown are planned and may be added during the biennium. The Institute reserves the right to add, delete or change programs and courses as may be required.

An introduction to each program as well as a list of subjects required in each major is provided. These programs are listed alphabetically within the technical-business and vocational-trade divisions respectively.



Course descriptions are given immediately following each section of introductions. Course descriptions are listed alphabetically, i.e., Agricultural, Business, Drafting, and Mathematics courses. Within the department, courses are given in numerical sequence.

In general, freshman technical courses are indicated by a "T," a three-letter prefix, and numbers between 100 and 200. The three-letter prefix indicates the department teaching the course. Sophomore courses have the letter prefixes and are numbered 200-300.

All one-year vocational courses will be indicated by a three-letter prefix and a number between 1000 and 2000.

Descriptions of the Basic Adult, General Adult, High School Diploma, Evening and Extension programs follow the course descriptions for the vocational-trade programs.

TECHNICAL AND BUSINESS PROGRAMS

ACCOUNTING

Accounting is one of the fastest growing employment fields in America today, and the job outlook for good accountants seems bright for many years to come. These opportunities result from the tremendous business and industrial expansion in all parts of the country. Because of this emphasis, there is a growing need for trained people in the area of accounting to help managers keep track of a firm's financial operation. The Accounting Curriculum is designed to fill this need by offering students the necessary accounting theories and skills for entry into the accounting profession.

The specific objectives of the Accounting Curriculum are to develop: (1) Understanding of the principles of organization and management in business operations; (2) Understanding of the fundamentals of accounting and analysis of financial statements; and (3) Understanding and skill in effective communications for business.

The duties and responsibilities of an accountant vary somewhat in different firms. Some of the duties an accountant might assume are to: record transactions, render periodic reports, maintain cost records, make special reports, complete tax returns, audit books, and advise management in areas of financial affairs.

The graduate of the Accounting Curriculum may qualify for various jobs in business and industry leading to any of the following accounting positions: accounting clerk, payroll clerk, accounting machine operator, auditor, and cost accountant. This training plus further experience should prepare graduates to become office managers, accounting supervisors, and to fill other responsible positions in a business firm.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (Or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-ECO	102	Economics	3	0	3
			18	3	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	120	Accounting	5	2	6
T-ECO	104	Economics	3	0	3
T-BUS	115	Business Law	3	0	3
T-BUS	123	Business Finance	3	0	3
			17	2	18

COURSE TITLE			Hours Per Week	Quarter Hours Credit
			Class	Lab.
THIRD QUARTER				
T-ENG 103	Report Writing	3	0	3
T-BUS 124	Business Finance	3	0	3
T-BUS 110	Office Machines	2	2	3
T-BUS 121	Accounting	5	2	6
T-BUS 116	Business Law	3	0	3
			16	18
FOURTH QUARTER				
T-ENG 204	Oral Communication	3	0	3
T-EDP 104	Introduction to Data Processing Systems	3	2	4
T-BUS 222	Accounting	5	2	6
	Elective	6	0	6
			17	19
FIFTH QUARTER				
T-ENG 206	Business Communication	3	0	3
	Social Science Elective	3	0	3
T-BUS 223	Accounting	5	2	6
T-BUS 225	Cost Accounting	3	2	4
T-BUS 235	Business Management	3	0	3
			17	19
SIXTH QUARTER				
	Social Science Elective	3	0	3
T-BUS 229	Taxes	3	2	4
F-BUS 269	Auditing	3	2	4
	Elective	4	0	4
			13	15
Total Quarter Hours in Courses				98
Electives (Min.)				10
Total				108

COURSE DESCRIPTIONS BEGIN PAGE 44



AGRICULTURAL BUSINESS

Rapid technological changes in farming and related agricultural businesses have given rise to the need for more technically trained people. A variety of agricultural businesses and industries employ persons to assist in marketing, processing, and distributing farm products and providing services to the farmer. Many responsible positions in agricultural businesses and industries require technical training not available in high schools or in four-year colleges.

As agricultural business and industry firms expand in size and number, they are experiencing rapid changes in the technologies of production, sales, and management in an increasingly competitive environment. It is anticipated that these changes in agriculture and the general economic environment will occur at an even faster rate in the next several years. Future employees of such firms must be prepared to understand these changes and adapt themselves accordingly.

The Agricultural Business Curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business, including agricultural production. It combines knowledge of agriculture with business training and successful completion of the program should enable the graduate to assume the responsibilities found in the many and varied opportunities in an Agri-Business firm.

Upon graduation, an individual should qualify for various jobs in agricultural business and industry such as, salesman or store manager in farm supply stores; agricultural field serviceman; salesman, demonstrator or plant manager of feed and food companies; farm products inspector; and salesman, or office managers of farm products marketing firms.

The trend toward larger farming operations with increased non-farm control of production means there will be greater employment opportunities for well-trained individuals who can efficiently and profitably supervise the production and marketing of agricultural products.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours
			Class	Credit
FIRST QUARTER				
T-ENG	101	Grammar	3	3
T-BUS	101	Introduction to Business	5	5
T-MAT	110	Business Mathematics	5	5
T-AGR	125	Animal Science	5	6
			<hr/> 18	<hr/> 19

COURSE TITLE			Hours Per Week Class Lab.	Quarter Hours Credit
SECOND QUARTER				
T-ENG 102	Composition	3	0	3
T-AGR 182	Soil Science and Fertilizers	5	2	6
T-BUS 120	Accounting	5	2	6
T-AGR 104	Introduction to Agricultural Economics	3	2	4
		16	6	19
THIRD QUARTER				
T-ENG 103	Report Writing	3	0	3
T-BUS 110	Office Machines	2	2	3
T-BUS 121	Accounting	5	2	6
T-AGR 170	Plant Science	5	2	6
		15	6	18
FOURTH QUARTER				
T-ENG 204	Oral Communication	3	0	3
T-BUS 123	Business Finance	3	0	3
T-BUS 232	Sales Development	3	0	3
T-AGR 204	Farm Business Management	5	2	6
	Elective*			3
		14	2	18
FIFTH QUARTER				
T-AGR 205	Agricultural Marketing	5	2	6
T-AGR 201	Agricultural Chemicals	5	2	6
	Social Science Elective	3	0	3
	Elective*			3
		13	14	18
SIXTH QUARTER				
T-AGR 228	Livestock Diseases and Parasites	3	2	4
T-AGR 218	Agricultural Mechanization	3	2	4
	Social Science Elective	3	0	3
	Elective*			5
		9	4	16

*At least six hours of electives should be in agricultural courses.

Total Hours in Courses	97
Electives (Max.)	11
Total	108

COURSE DESCRIPTIONS BEGIN PAGE 44

ARCHITECTURAL DRAFTING AND DESIGN TECHNOLOGY

This curriculum was designed in cooperation with the North Carolina Chapter of the American Institute of Architects. Its basic purpose is to train architectural draftsmen for the architect's office and the building industry.

Through a survey made of North Carolina AIA members, it was determined that a large number of architectural draftsmen is needed to fill existing vacancies. Projections show that this need will more than double by late 1968.

This program provides the individual with the technical drafting skills and knowledge leading to employment and rapid advancement into related areas of work as job experience is obtained.

Architectural drafting technicians are concerned with turning the architects design sketches into complete and accurate working plans and detail drawings for construction purposes. He may prepare floor plans, elevation drawings, construction details, mechanical equipment layouts, door, window, and room schedules, and site plans. The drafting technician will be involved in work requiring a knowledge of building codes, specifications, and contract documents.

With experience, the technician may be involved in estimating, field inspection, or in collecting site data and other information pertinent to construction.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Properties of Matter	3	2	4
T-DFT	106	Architectural Drafting	2	6	4
T-CIV	105	Architectural Materials & Methods	3	3	4
			16	11	20
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	104	Physics: Light and Sound	3	2	4
T-DFT	107	Architectural Drafting	2	6	4
T-AHR	106	Architectural Mechanical Equipment	3	3	4
			16	11	20
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-MAT	103	Technical Mathematics	5	0	5
T-PHY	103	Physics: Electricity	3	2	4
T-DFT	108	Architectural Drafting	0	9	3
T-CIV	114	Statics	5	0	5
			16	11	20
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-CIV	216	Strength of Materials	3	2	4
T-DFT	220	Architectural Drafting	2	9	5
T-CIV	101	Surveying	2	6	4
			10	17	16

COURSE TITLE		Hours Per Week Class	Lab.	Quarter Hours Credit
FIFTH QUARTER				
_____ Social Science Elective		3	0	3
T-DFT	221 Architectural Drafting	2	9	5
T-DFT	223 Office Practice Seminar	2	0	2
T-DFT	235 Codes, Specifications and Contract Documents	3	3	4
_____ Elective (Min.)				3
		<hr/> 10	<hr/> 12	<hr/> 17
SIXTH QUARTER				
_____ Social Science Elective		3	0	3
T-DFT	222 Architectural Drafting	2	9	5
T-DFT	236 Construction Estimating and Field Inspecting	3	3	4
_____ Elective (Min.)				3
		<hr/> 8	<hr/> 12	<hr/> 15
Total Quarter Hours in Courses				102
Electives (Min.)				<hr/> 6
Total				<hr/> 108

COURSE DESCRIPTIONS BEGIN PAGE 44

BUSINESS ADMINISTRATION

In North Carolina the opportunities in business are increasing. With the increasing population and industrial development in this State, business has become more competitive and automated. Better opportunities in business will be filled by students with specialized education beyond the high school level. The Business Administration Curriculum is designed to prepare the student for employment in one of many occupations common to business. Training is aimed at preparing the student in many phases of administrative work that might be encountered in the average business.

The specific objectives of the Business Administration Curriculum are to develop: (1) Understanding of the principles of organization and management in business operations; (2) Understanding our economy through study and analysis of the role of production and marketing; (3) Knowledge in specific elements of accounting, finance, and business law; (4) Understanding and skill in effective communication for business; (5) Knowledge of human relations as they apply to successful business operations in a rapidly expanding economy.

The graduate of the Business Administration Curriculum may enter a variety of career opportunities from beginning sales person or office clerk to manager trainee. The duties and responsibilities of this graduate vary in different firms. These duties might include: making up and filing reports, tabulating and posting data in various books, sending out bills, checking calcu-

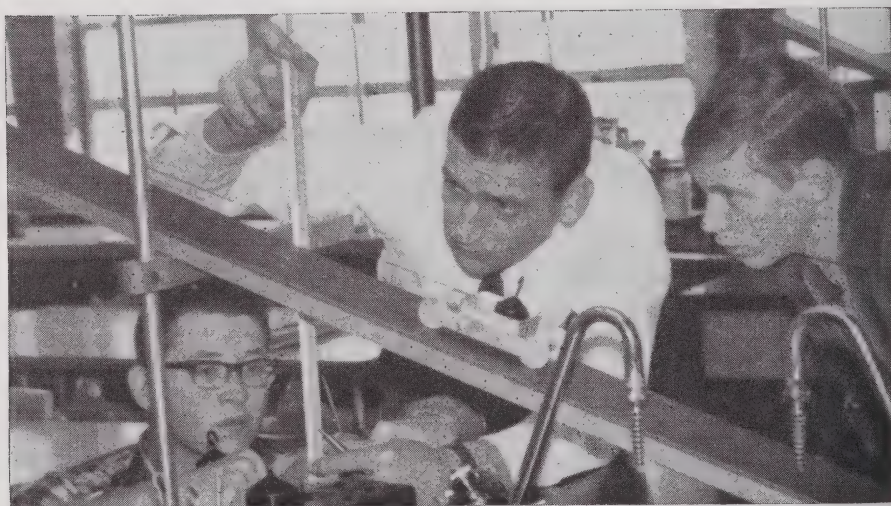
lations, adjusting complaints, operating various office machines, and assisting managers in supervising. Positions are available in businesses such as advertising; banking; credit, finance, retailing; wholesaling; hotel, tourist, and travel industry; insurance; transportation; and communications.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-ECO	102	Economics	3	0	3
			18	3	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	120	Accounting	5	2	6
T-ECO	104	Economics	3	0	3
T-BUS	115	Business Law	3	0	3
T-BUS	123	Business Finance	3	0	3
			17	2	18
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	124	Business Finance	3	0	3
T-BUS	110	Office Machines	2	2	3
T-BUS	121	Accounting	5	2	6
T-BUS	116	Business Law	3	0	3
			16	4	18
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	232	Sales Development	3	0	3
T-EDP	104	Introduction to Data Processing			
		Systems	3	2	4
T-BUS	239	Marketing	5	0	5
		Elective	3	0	3
			17	2	18
FIFTH QUARTER					
T-ENG	206	Business Communication	3	0	3
		Social Science Elective	3	0	3
T-BUS	243	Advertising	3	2	4
T-BUS	235	Business Management	3	0	3
		Elective	3	0	3
			15	2	16

COURSE TITLE		Hours Per Week Class	Lab.	Quarter Hours Credit
SIXTH QUARTER				
	Social Science Elective	3	0	3
T-BUS 229	Taxes	3	2	4
T-BUS 272	Principles of Supervision	3	0	3
T-BUS 271	Office Management	3	0	3
	Electives	6	0	6
		<hr/> 18	<hr/> 2	<hr/> 19
Total Quarter Hours in Courses				96
Electives (Min.)				12
Total				<hr/> 108

COURSE DESCRIPTIONS BEGIN PAGE 44



ELECTRONICS TECHNOLOGY

The field of electronics has developed at a tremendously rapid pace, especially since 1940. For many years the major concern of electronics was in the area of communications. Developments during and following World War II have revolutionized production techniques. Completely new industries have been established to supplement the need and demand for electronics equipment. This rapid growth of the electronics industry has been accompanied by an equally phenomenal growth in the demand for qualified technicians—both men and women.

This program provides a basic background in electronics theory and practical applications for business and industry. The electronics technician may start in one or more of the following areas: research, design, development, production, maintenance, or sales. He may be an engineering assistant, a laboratory technician, supervisor, or equipment specialist.

Upon completion of this program, students will find employment opportunities in such fields as radio and television production, radar, sonar, telemetering, and other forms of communication such as telephone; industrial and medical measuring, recording, indicating, and controlling devices; navigational equipment; missile and spacecraft guidance; electronic computers; and other types of equipment using vacuum tubes, transistors, and semiconductor circuits.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours Credit
			Class	Lab.
FIRST QUARTER				
T-ENG 101	Grammar	3	0	3
T-MAT 101	Technical Mathematics	5	0	5
T-PHY 101	Physics: Properties of Matter	3	2	4
T-DFT 101	Technical Drafting	0	6	2
T-ELC 101	Fundamentals of Electricity	4	4 or 6	6
		15	12 or 14	20
SECOND QUARTER				
T-ENG 102	Composition	3	0	3
T-MAT 102	Technical Mathematics	5	0	5
T-PHY 102	Physics: Work, Energy, Power	3	2	4
T-DFT 102	Technical Drafting	0	6	2
T-ELC 102	Fundamentals of Electricity	4	4 or 6	6
		15	12 or 14	20
THIRD QUARTER				
T-ENG 103	Report Writing	3	0	3
T-MAT 103	Technical Mathematics	5	0	5
T-ELN 101	Electronic Instruments and Measurements	1	4 or 6	3
T-ELN 105	Control Devices	5	4 or 6	7
		14	8 or 12	18
FOURTH QUARTER				
T-ENG 204	Oral Communication	3	0	3
T-MAT 201	Technical Mathematics	5	0	5
T-PHY 104	Physics: Light and Sound	3	2	4
T-ELN 205	Applications of Vacuum Tubes and Transistors	5	4 or 6	7
		16	6 or 8	19
FIFTH QUARTER				
	Social Science Elective	3	0	3
T-ELN 210	Semiconductor Circuit Analysis	5	2 or 3	6
T-ELN 214	Wave Shaping and Pulse Circuits	2	2 or 3	3
	Elective			3
		10	4 or 6	15

COURSE TITLE		Hours Per Week	Quarter Hours Credit	
		Class	Lab.	
SIXTH QUARTER				
	Social Science Elective	3	0	3
T-ELN 215	Wave Shaping and Pulse Circuits	2	2 or 3	3
T-ELN 220	Electronic Systems	5	4 or 6	7
	Elective			3
		10	6 or 9	16
Total Quarter Hours in Courses				102
Electives (Min.)				6
		Total		108

COURSE DESCRIPTIONS BEGIN PAGE 44

EXECUTIVE SECRETARIAL TECHNOLOGY

Almost 11 million people were employed in clerical or some closely related type of work in 1965. More than 2 million of these were employed in occupations requiring stenographic skills. In fact, more individuals are employed in the clerical fields than in any other single category.

A very rapid increase in employment in the late 1960's and early 1970's is anticipated. Openings may total more than 200,000 annually. Local employment opportunities parallel national trends.

The executive secretarial curriculum is designed to develop the necessary secretarial skills in typing, dictation, transcription, operation of office machines, and terminology for employment in the business world. The special training in secretarial subjects is supplemented by related courses in mathematics, accounting, business law, and personality development.

The graduate of the Executive Secretarial curriculum may be employed as a stenographer or a secretary as well as in a variety of other clerical occupations. Stenographers are primarily responsible for taking dictation and transcribing letters, memoranda, or reports. The secretary, in addition to taking dictation and transcribing, is given more responsibility in connection with meeting office callers, screening telephone calls, handling numerous routine duties, private and confidential records, and a variety of business details on her own initiative. Positions are available in a variety of businesses such as insurance companies, banks, marketing institutions, financial firms, as well as all types of manufacturing firms.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	2
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	106	Shorthand (or Elective)	3	2	4
			18	5	20

COURSE TITLE		Hours Per Week		Quarter Hours Credit
		Class	Lab.	
SECOND QUARTER				
T-ENG 102	Composition	3	0	3
T-BUS 103	Typewriting (or Elective)	2	3	3
T-BUS 107	Shorthand	3	2	4
T-BUS 120	Accounting	5	2	6
T-BUS 115	Business Law	3	0	3
		16	7	19
THIRD QUARTER				
T-ENG 103	Report Writing	3	0	3
T-BUS 104	Typewriting	2	3	3
T-BUS 108	Shorthand	3	2	4
T-BUS 110	Office Machines	2	2	3
T-BUS 112	Filing	3	0	3
		13	7	16
FOURTH QUARTER				
T-ENG 204	Oral Communication	3	0	3
T-BUS 206E	Executive Dictation & Transcription	3	2	4
T-BUS 205	Advanced Typewriting	2	3	3
T-BUS 211	Office Machines	2	2	3
T-EDP 104	Introduction to Data Processing Systems	3	2	4
		13	9	17
FIFTH QUARTER				
T-ENG 206	Business Communication	3	0	3
T-BUS 207E	Executive Dictation & Transcription	3	2	4
T-BUS 214	Secretarial Procedures	3	2	4
	Social Science Elective	3	0	3
	Elective(s)	6	0	6
		18	4	20
SIXTH QUARTER				
	Social Science Elective	3	0	3
T-BUS 208E	Executive Dictation & Transcription	3	2	4
T-BUS 271	Office Management	3	0	3
	Elective(s)	6	0	6
		15	2	16
Total Quarter Hours in Courses				96
		Electives (Min.)		12
		Total		108

COURSE DESCRIPTIONS BEGIN PAGE 44

FURNITURE DRAFTING AND DESIGN TECHNOLOGY

North Carolina, and especially the area served by CVTI, is one of the leading centers of furniture production in the world. Thus, there is a continually increasing demand for men and women qualified as furniture craftsmen.

Furniture drafting and design technicians are concerned with the preparation of drawings required for design proposals, for samples, and for actual items in production.

Furniture draftsmen perform many duties. Working from pictorial drawings and written or verbal general specifications of the designer they will

develop the necessary drawings for production and assembly. Frequently, they coordinate sample production and development of finishes; investigate new materials and methods; research design problems; assist in showroom planning and set-up; and work with sales and customer services.

Technicians with experience may often be called upon to act as product development supervisors and to contribute greatly in product design.

Furniture Drafting and Design technicians are employed by all classifications of household, institutional, office, and church furniture manufacturers, design consultants, and interior designers.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Properties of Matter	3	2	4
T-DFT	101	Technical Drafting	2	6	4
T-CAB	101	Furniture Processes	3	3	4
			16	11	20
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	102	Physics: Work, Energy, Power	3	2	4
T-DFT	102	Technical Drafting	2	6	4
T-UPH	102	Furniture Processes	3	3	4
			16	11	20
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-ISc	215	Product Development	3	0	3
T-DFT	105	Furniture Drafting	2	6	4
T-DES	117	Visual Design I	2	6	4
T-DES	225	Furniture Styling	2	3	3
			12	15	17
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-DFT	204	Descriptive Geometry	2	4	4
T-DFT	240	Furniture Drafting	2	6	4
T-DES	118	Visual Design II	3	3	4
T-DES	239	Rendering	2	3	3
			12	16	18
FIFTH QUARTER					
			3	0	3
T-DFT	241	Furniture Design Drafting	2	6	4
T-DES	216	Tectonic Design	3	3	4
T-DES	245	Anatomical Relationships	5	0	5
					3
			13	9	19

COURSE TITLE

Hours Per Week
Class Lab.

Quarter Hours Credit

SIXTH QUARTER

		Social Science Elective	3	0	3
T-DFT	242	Furniture Design Drafting	2	6	4
T-DES	250	Interior Planning and Display	3	3	4
		Two Electives (Min.)			6
			8	9	17
		Total Quarter Hours in Courses			102
		Electives (Min.)			9
		Total			111

COURSE DESCRIPTIONS BEGIN PAGE 44

LEGAL SECRETARIAL TECHNOLOGY

The demand for better qualified legal secretaries in our ever-expanding legal profession is becoming more and more acute. The purpose of this program is to provide specialized training in the accepted procedures required by the legal profession.

The curriculum is designed to develop the necessary secretarial skills in typing, dictation, transcription, and terminology for employment in the legal profession. The specialized legal training is supplemented by related courses in mathematics, accounting, law, and personality development.

The graduate of the Legal Secretarial program will be a specialist, having a knowledge of legal terminology, as well as skill in dictation and accurate transcription of legal records, reports, letters, and documents. The duties may consist of meeting office callers, screening telephone calls, filing, scheduling appointments, handling private or confidential records and reports, taking dictation and transcribing letters, memoranda, and reports, and/or possible supervision of others on the clerical staff.

Opportunities for employment exist in a variety of secretarial positions in the legal profession such as in law firms, lawyers' offices, courts, and state and government offices.

CURRICULUM BY QUARTERS**COURSE TITLE**

Hours Per Week
Class Lab.

Quarter Hours Credit

FIRST QUARTER

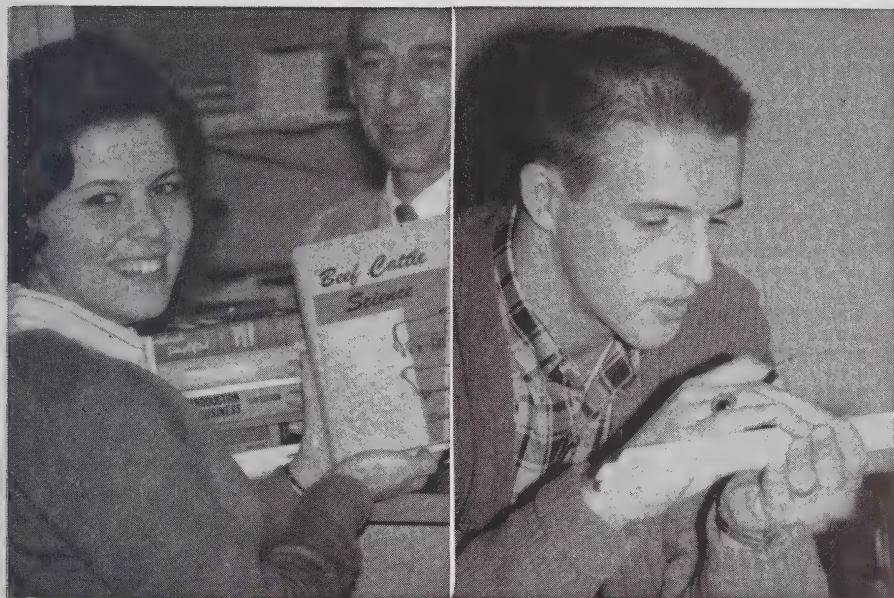
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	106	Shorthand (or Elective)	3	2	4
			18	5	20

COURSE TITLE			Hours Per Week	Quarter Hours Credit
			Class	Lab.
SECOND QUARTER				
T-ENG 102	Composition	3	0	3
T-BUS 103	Typewriting (or Elective)	2	3	3
T-BUS 107	Shorthand	3	2	4
T-BUS 120	Accounting	5	2	6
T-BUS 115	Business Law	3	0	3
		16	7	19
THIRD QUARTER				
T-ENG 103	Report Writing	3	0	3
T-BUS 104	Typewriting	2	3	3
T-BUS 108	Shorthand	3	2	4
T-BUS 110	Office Machines	2	2	3
T-BUS 112	Filing	3	0	3
T-BUS 183L	Legal Terminology & Vocabulary	3	0	3
		16	7	19
FOURTH QUARTER				
T-ENG 204	Oral Communication	3	0	3
T-BUS 206L	Legal Dictation and Transcription	3	2	4
T-BUS 205	Advanced Typewriting	2	3	3
T-BUS 211	Office Machines	2	2	3
T-EDP 104	Introduction to Data Processing Systems	3	2	4
		13	9	17
FIFTH QUARTER				
T-ENG 206	Business Communication	3	0	3
T-BUS 207L	Legal Dictation & Transcription	3	2	4
T-BUS 214	Secretarial Procedures	3	2	4
	Social Science Elective	3	0	3
	Elective	3	0	3
		15	4	17
SIXTH QUARTER				
	Social Science Elective	3	0	3
T-BUS 208L	Legal Dictation & Transcription	3	2	4
T-BUS 271	Office Management	3	0	3
	Elective(s)	6	0	6
		15	2	16
Total Hours in Courses				99
Electives (Min.)				9
Total				108

COURSE DESCRIPTIONS BEGIN PAGE 44

MECHANICAL DRAFTING AND DESIGN TECHNOLOGY

In making a space capsule or an electric iron, a nuclear submarine or a television set, a bridge or a typewriter, detailed plans are needed that give the exact dimensions and specifications for the entire object and each of its parts. The men and women who draw these plans are draftsmen.



Employment of draftsmen, locally and nationally, is expected to rise rapidly as a result of the increasingly complex design problem. The number needed only to replace those who retire or die is estimated at more than 10,000 annually.

Mechanical drafting technicians translate the ideas, rough sketches, specifications and calculations of engineers and designers into working plans used in making machines and all types of mechanical equipment. Draftsmen may calculate the strength, reliability, and cost of materials. In their drawings and specifications, they describe exactly what materials and processes workers are to use on a particular job.

To prepare drawings, CVTI students develop skill in using such instruments as compasses, dividers, protractors, triangles, and drafting machines. They also learn to use engineering handbooks and tables to assist in solving technical problems. Graduates may also coordinate design, production, tooling, material and planning activities. With experience they may often supervise the preparation of working drawings.

Mechanical drafting technicians are employed in many types of manufacturing, fabrication, research development and service industries. Substantial numbers are also employed in communications, transportation, public utilities, consulting engineering firms, and federal, state, and local governments.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Properties of Matter	3	2	4
T-DFT	101	Technical Drafting	0	6	2
T-MEC	101	Machine Processes	0	6	2
			11	14	16
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	102	Physics: Work, Energy, Power	3	2	4
T-DFT	102	Technical Drafting	0	6	2
T-MEC	102	Machine Processes	0	6	2
			11	14	16
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-MAT	103	Technical Mathematics	5	0	5
T-PHY	103	Physics: Electricity	3	2	4
T-PHY	106	Applied Mechanics	5	0	5
T-DFT	103	Technical Drafting	0	6	2
			16	8	19
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-DFT	201	Technical Drafting	2	6	4
T-DFT	204	Descriptive Geometry	2	4	4
T-MEC	205	Strength of Materials	3	2	4
T-MEC	210	Physical Metallurgy	3	3	4
			13	15	19
FIFTH QUARTER					
			3	0	3
T-DFT	205	Design Drafting I	2	6	4
T-DFT	211	Mechanisms	3	2	4
T-MEC	211	Physical Metallurgy	3	3	4
					4
			11	11	19
SIXTH QUARTER					
			3	0	3
T-DFT	206	Design Drafting II	2	6	4
T-MEC	235	Hydraulics & Pneumatics	3	3	4
					4
					4
			8	9	19

Total Quarter Hours in Courses	96
Minimum Electives	12
Total	108

COURSE DESCRIPTIONS BEGIN PAGE 44

MEDICAL SECRETARIAL TECHNOLOGY

The population explosion and the rapid advancements within the field of medical knowledge have created an acute need for medical personnel, including medical secretaries. The purpose of this program is to provide specialized training in the accepted procedures required by the medical and related health professions.

The Medical Secretarial curriculum is designed to develop required skills such as typing, dictation, and transcription, as well as medical terminology and vocabulary. The special training in secretarial subjects is supplemented by needed related courses in mathematics, accounting, business law, personality development, and human relations.

The Medical Secretary may be employed in a variety of positions such as in physicians' offices, private and public hospitals, federal, state and local health programs, insurance offices, and pharmaceutical firms. The duties of the graduate may include taking dictation, transcribing, and typing letters, memoranda and medical reports; meeting office callers, screening telephone calls, scheduling appointments; maintaining medical records and insurance reports, as well as certain financial records.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week Class	Lab.	Quarter Hours Credit
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	106	Shorthand (or Elective)	3	2	4
			18	5	20
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	103	Typewriting (or Elective)	2	3	3
T-BUS	107	Shorthand	3	2	4
T-BUS	120	Accounting	5	2	6
T-BUS	115	Business Law	3	0	3
			16	7	19
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	104	Typewriting	2	3	3
T-BUS	108	Shorthand	3	2	4
T-BUS	110	Office Machines	2	2	3
T-BUS	112	Filing	3	0	3
T-BUS	183M	Medical Terminology & Vocabulary	3	0	3
			16	7	19

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	206M	Medical Dictation & Transcription	3	2	4
T-BUS	205	Advanced Typewriting	2	3	3
T-BUS	211	Office Machines	2	2	3
T-EDP	104	Introduction to Data Processing Systems	3	2	4
T-BUS	284M	Medical Terminology & Vocabulary	3	0	3
			16	9	20
FIFTH QUARTER					
T-ENG	206	Business Communication	3	0	3
T-BUS	207M	Medical Dictation & Transcription	3	2	4
T-BUS	214	Secretarial Procedures	3	2	4
			3	0	3
			3	0	3
			15	4	17
SIXTH QUARTER					
			3	0	3
T-BUS	208M	Medical Dictation & Transcription	3	2	4
T-BUS	271	Office Management	3	0	3
			3	0	3
			12	2	13
Total Quarter Hours in Courses					102
Electives (Min.)					6
Total					108

COURSE DESCRIPTIONS BEGIN PAGE 44

ORNAMENTAL HORTICULTURE TECHNOLOGY

The increased interest in Landscape Horticulture, Floriculture, Nursery Management, Vegetable, and Fruit Crops have created a definite demand for Horticulture Technicians.

Employment opportunities would include: garden shop manager, landscape designer, greenhouse and nursery manager, planting supervisor, ornamental plant maintenance supervisor, golf course and parts maintenance supervisor.

The Ornamental Horticulture Technology Curriculum provides a basic knowledge of plant and soil science with practical application of the production, use and maintenance of ornamental plants. Through work and experience in the laboratory, greenhouse and lath house, the student will develop the skills and knowledge required for employment in this field.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-AGR	170	Plant Science	5	2	6
T-BUS	101	Introduction to Business	5	0	5
T-AGR	150	General Horticulture	3	0	3
			16	2	17

COURSE TITLE

Hours
Per Week
Class Lab. Quarter
Hours
Credit

SECOND QUARTER

T-ENG 102	Composition	3	0	3
T-CHM 101	Chemistry	4	2	5
T-AGR 185	Soil Science and Fertilizers	5	2	6
T-AGR 151	Plant Materials, Identification and Use I	2	4	4
		14	8	18

THIRD QUARTER

T-ENG 103	Report Writing	3	0	3
T-AGR 152	Plant Propagation	2	2	3
T-AGR 153	Plant Materials, Identification and Use II	2	2	3
T-AGR 154	Ornamental Plant Pests	3	4	5
T-AGR 155	Floriculture	3	2	4
		13	10	18

FOURTH QUARTER

T-ENG 204	Oral Communication	3	0	3
T-BUS 232	Sales Development	3	0	3
T-MAT 110	Business Mathematics	5	0	5
T-AGR 251	Landscape Planning	2	4	4
T-AGR 254	Greenhouse Management	3	2	4
		16	6	19

FIFTH QUARTER

T-AGR 253	Landscape Gardening	3	2	4
T-AGR 255	Arboriculture	3	2	4
T-BUS 235	Business Management	3	0	3
	Social Science Elective	3	0	3
	Elective(s)	0	0	4
		12	4	18

SIXTH QUARTER

T-AGR 257	Nursery Practices	3	2	4
T-AGR 201	Agriculture Chemicals	5	2	6
T-AGR 258	Turf Practices	2	2	3
	Social Science Elective	3	0	3
	Elective	0	0	4
		13	6	20

Total Quarter Hours in Courses 101
Electives (Min.) 7
Total 108

COURSE DESCRIPTIONS BEGIN PAGE 44

TRAFFIC AND TRANSPORTATION

North Carolina, in its tremendous industrial growth, has a need for more highly trained and skilled personnel in the traffic and transportation industry. The purpose of this curriculum is to provide training in new techniques, and an understanding of the latest State and Federal regulations applicable to traffic and transportation, which should enable the student to accept employment in a higher-level job in the traffic and transportation industry.

The specific objectives of the Traffic and Transportation Curriculum are to develop: (1) understanding of the principles of organization and man-

agement in business operations and the traffic and transportation industry; (2) understanding and skill in effective communication for business; (3) understanding of the Interstate Commerce Act and related acts as they apply to traffic and transportation; and (4) understanding of the role traffic and transportation plays in the expanding business economy.

The graduate of this curriculum may seek career opportunities in the traffic and transportation industry as traffic representative, claims representative, dispatcher, rate analyst, and operational supervisor. A traffic representative is responsible for calling on the shipping public and selling the services of his respective company for their use. A claims representative renders and investigates claims for losses, shortages, damages, or overcharges on shipments of merchandise and adjusts claims. The dispatcher is responsible for dispatching men or equipment to prevent or rectify disruptions in service in all departments of a transportation system. The rate specialist determines rates, routes, and classifications applicable to merchandise or material shipped or received by common carrier. The responsibilities of the operational supervisor include the supervision of those activities that will assure the smooth and constant flow of the traffic through the terminal area.

This training, with additional experience, should qualify the student for positions as claims manager, operational manager, and managers of transportation terminals.

CURRICULUM BY QUARTERS

COURSE TITLE		Hours Per Week		Quarter Hours Credit
		Class	Lab.	
FIRST QUARTER				
T-ENG	101 Grammar	3	0	3
T-BUS	102 Typewriting (or Elective)	2	3	3
T-MAT	110 Business Mathematics	5	0	5
T-BUS	101 Introduction to Business	5	0	5
T-ECO	102 Economics	3	0	3
		<hr/> 18	<hr/> 3	<hr/> 19
SECOND QUARTER				
T-ENG	102 Composition	3	0	3
T-BUS	120 Accounting	5	2	6
T-ECO	104 Economics	3	0	3
T-BUS	115 Business Law	3	0	3
T-BUS	178 Traffic and Transportation	3	0	3
		<hr/> 17	<hr/> 2	<hr/> 18
THIRD QUARTER				
T-ENG	103 Report Writing	3	0	3
T-BUS	121 Accounting	5	2	6
T-BUS	116 Business Law	3	0	3
T-BUS	179 Traffic and Transportation	3	0	3
T-ECO	106 Economics of Transportation	3	0	3
		<hr/> 17	<hr/> 2	<hr/> 18

COURSE TITLE

**Hours
Per Week**
Class Lab.

**Quarter
Hours
Credit**

FOURTH QUARTER

T-ENG	204	Oral Communication	3	0	3
T-BUS	280	Traffic and Transportation	3	0	3
T-BUS	290	Motor Carrier	3	0	3
T-BUS	285	ICC Law	3	0	3
T-BUS	232	Sales Development	3	0	3
		Elective	3	0	3
			18	0	18

FIFTH QUARTER

T-ENG	206	Business Communication	3	0	3
		Social Science Elective	3	0	3
T-BUS	281	Traffic and Transportation	3	0	3
T-BUS	286	ICC Law	3	0	3
T-BUS	291	Motor Carrier	3	0	3
		Elective	3	0	3
			18	0	18

SIXTH QUARTER

		Social Science Elective	3	0	3
T-BUS	295	Traffic Claims	3	0	3
T-BUS	299	Traffic Management	3	0	3
T-BUS	287	ICC Law	3	0	3
		Elective	5	0	5
			17	0	17

Total Quarter Hours in Courses 97
Electives (Min.) 11
Total 108

COURSE DESCRIPTIONS BEGIN PAGE 44



TECHNICAL AND BUSINESS COURSE DESCRIPTIONS

AGRICULTURE

	Class	Lab.	Credit
T-AGR 104 Introduction to Agricultural Economics	3	2	4
An introduction to economics, the functions of the economic system and agriculture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main sources of changes which affect agricultural firms. Prerequisite: None.			
T-AGR 125 Animal Science	5	2	6
An introductory animal science course covering the fundamental principles of livestock production. A study of the animal body and the basic principles of reproduction, genetics, growth, fattening, digestion, along with the selection, feeding, improvement, processing and marketing of livestock. Prerequisite: None.			
T-AGR 127 Animal Nutrition	5	2	6
A course dealing with the principles of nutrition and their application to feeding practices of cattle, horse, sheep and swine production in North Carolina. Prerequisite: T-AGR 125.			
T-AGR 150 General Horticulture	3	2	4
A course dealing with horticulture principles and the application of plant science fundamentals to horticultural practices. Prerequisite: None.			
T-AGR 151 Plant Materials, Identification, and Use I	2	4	4
Identification, adaptation and use of ornamental plants. Prerequisite: T-AGR 150.			
T-AGR 152 Plant Propagation	3	2	4
A course dealing with the fundamental principles involved in plant propagation, with emphasis in the practical knowledge of useful techniques for propagating plants. Prerequisite: T-AGR 150.			
T-AGR 153 Plant Materials, Identification, and Use II	2	2	3
A course primarily designed to study the woody plants grown in nurseries for landscape purposes, but will also include those found in woodlands and fields in North Carolina. Identification, culture and uses of selected evergreens and deciduous shrubs will be covered. Prerequisite: T-AGR 170.			
T-AGR 154 Ornamental Plant Protection	3	4	5
A review of the basic principles of entomology and plant pathology. Emphasis on the identification and practical methods of control of pests that attack ornamental plants; insects, diseases, weeds and rodents. Prerequisite: T-AGR 170.			
T-AGR 155 Floriculture	3	2	4
Culture and use of commercial flowering plants. Emphasis on flowering pot plants but includes foliage plants, bulbs, and house plants of the florist business. Principles of floral design. Prerequisite: T-AGR 170.			
T-AGR 170 Plant Science	5	2	6
An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions, and development of seed bearing			

	Class	Lab.	Credit
plants with application to certain commercially important plants in North Carolina. Prerequisite: None.			
T-AGR 180 General Poultry Science	3	2	4
An introduction to the science of poultry production. The major phases of the study include the history of the poultry industry; the anatomy and physiology of the chicken; the breeds and varieties; the breeding principles; the principles of incubation, brooding, rearing, feeding, housing and management; marketing poultry products; and the science of disease and parasite prevention and control. Prerequisite: None.			
T-AGR 185 Soil Science and Fertilizers	5	2	6
A course dealing with basic principles of efficient classification, evaluation, and management of soils; care, cultivation, and fertilization of the soil, and conservation of soil fertility. Prerequisite: None.			
T-AGR 187 Fertilizers and Lime	3	2	4
A review of the source, function, and the use of the major and minor plant food elements; commercial fertilizer ingredients; soil acidity, liming materials; application of fertilizer and liming materials. Prerequisite: None.			
T-AGR 201 Agricultural Chemicals	5	2	6
A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control. Prerequisite: None.			
T-AGR 204 Farm Business Management	5	2	6
A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most net revenue. Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager. Prerequisite: T-AGR 104.			
T-AGR 205 Agricultural Marketing	5	2	6
An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco. Prerequisite: T-AGR 104.			
T-AGR 206 Agricultural Finance	3	0	3
Analysis of the capital structure of modern commercial agriculture with emphasis on the sources of credit. A review of lending institutions, repayment schedules, and credit instruments. Practice in the procedure of evaluating farm resources with attention to information needed for resource valuation, appraisal forms and procedures, discounting and depreciation. Prerequisite: None.			
T-AGR 209 Agricultural Prices	3	0	3
An introduction to the functions of prices in our economic system and the effects of changing price levels. The influence consumer demand has on prices through price and			

	Class	Lab.	Credit
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income elasticities. A review of the influences of cycles and timing of production along with an examination of the use of future commodity contracts. Application of the principles of price analysis to price control and parity programs. Familiarization with the various tools widely used in historical analysis and forecasting. Prerequisite: T-AGR 104.

T-AGR 218 Agricultural Mechanization	3	2	4
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A study of farm machinery management and labor-saving devices. The economics of selection and operation of farm machinery. Study and evaluation of feed grinders, and mixers, storage facilities, materials handling systems and other labor-saving devices. Prerequisite: None.

T-AGR 222 Farm Electrification	3	2	4
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A study of the basic principles and systems, and their application to agricultural production with emphasis on equipment for controlling the utilization of electricity. Prerequisite: None.

T-AGR 225 Dairy and Beef Production	5	2	6
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A study of the principles of selection, breeding, feeding, care and management of dairy and beef cattle. Prerequisite: T-AGR 125.

T-AGR 226 Swine Production	3	2	4
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Development of the swine production and marketing industries; principles and practices of selection, breeding, feeding, housing, marketing and management of swine. Prerequisite: T-AGR 125.

T-AGR 228 Livestock Diseases and Parasites	3	2	4
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A course dealing with the common diseases and parasites of livestock; sanitation practices and procedures with emphasis on the cause, damage, symptoms, prevention and treatment of parasites and diseases, and management factors relating to disease and parasite prevention and control. Prerequisite: T-AGR 125.

T-AGR 250 Fruit and Vegetable Production	3	2	4
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A course dealing with the fruit and vegetable production. A study of the importance and principles of production and marketing of the major vegetable crops. Identification and methods of production and marketing of the principal tree and small fruits. Prerequisite: T-AGR 150.

T-AGR 251 Landscape Design	2	4	4
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The principles and practices of landscape design with application to selected landscape problems. On-the-job sketching and plan presentation as done by the nurseries. Planning of small home grounds as well as problems of design and construction dealing with grading, walls, steps, and other garden accessories. Prerequisite: T-AGR 151.

T-AGR 252 Landscape Gardening	3	2	4
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Maintenance of landscape areas including planting, pruning, fertilization and pest control. Landscape economics: costs, contracts, calculating areas, volumes, and plant quantities for landscape projects. Selection and use of materials in landscape construction. Prerequisite: T-AGR 151.

T-AGR 254 Greenhouse Management	2	2	3
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Fundamentals of and practices in greenhouse plant production. Prerequisite: T-AGR 150.

	Class	Lab.	Credit
T-AGR 255 Arboriculture	3	2	4
Principles and practices of selection, use establishment and care of shade and ornamental trees. Prerequisite: T-AGR 151.			
T-AGR 257 Nursery Management	3	2	4
Retail and wholesale nursery practices. Layouts, selling, handling of plant materials. Commercial nursery stock production dealing with plant growth patterns and plant responses in relation to soils, water, fertility, planting techniques and distances, top and root pruning. Plant production cycles, rotations, and kind of treatment for economy production. Prerequisite: T-AGR 151.			
T-AGR 258 Turf Management	2	2	3
A study of turf grasses including identification, seeding establishment, use and maintenance. Prerequisites: T-AGR 170; T-AGR 185.			
T-AGR 272 Tobacco Technology	3	2	4
A review of the economic importance of tobacco in North Carolina and a detailed study of all aspects of the production and marketing of tobacco with a brief look at the processing and manufacturing phases. Prerequisite: T-AGR 170.			
T-AGR 273 Grain Production and Marketing	3	0	3
A course covering the various phases of grain-crop production and marketing with emphasis on those of economical importance to North Carolina. Prerequisite: T-AGR 170.			
T-AGR 296 Agricultural Programs and Agencies	3	2	4
A review of the public agriculture programs and agencies that provide services for agricultural producers. The objectives, organization, functions and services of these organizations. Prerequisite: None.			

BUSINESS

T-BUS 101 Introduction to Business	5	0	5
A survey of the business world with particular attention devoted to the structure of the various types of business organization, methods of financing, internal organization, and management. Prerequisite: None.			
T-BUS 102 Typewriting	2	3*	3
Introduction to the touch typewriting system with emphasis on correct techniques, mastery of the keyboard, simple business correspondence, tabulation, and manuscripts. Prerequisite: None.			
T-BUS 103 Typewriting	2	3*	3
Instruction emphasizes the development of speed and accuracy with further mastery of correct typewriting techniques. These skills and techniques are applied in tabulation, manuscript, correspondence, and business forms. Prerequisite: T-BUS 102 or equivalent. Speed requirement, 30 words per minute for five minutes.			
T-EDP 104 Introduction to Data Processing Systems	3	2	4
Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers, prerequisite to the detail study of particular computer problems. This course is a prerequisite for all programming courses. Prerequisite: None.			

	Class	Lab.	Credit
T-BUS 104 Typewriting	2	3*	3
Emphasis is on production typing problems and speed building. Attention to the development of the student's ability to function as an expert typist, producing mailable copies. The production units are tabulation, manuscript, correspondence, and business forms. Prerequisites: T-BUS 103 or the equivalent. Speed requirement, 40 words per minute for five minutes.			
T-BUS 106 Shorthand	3	2	4
A beginning course in the theory and practice of reading and writing shorthand. Emphasis on phonetics, penmanship, word families, brief forms, and phrases. Prerequisite: None.			
T-BUS 107 Shorthand	3	2	4
Continued study of theory with greater emphasis on dictation and elementary transcription. Prerequisite: T-BUS 106 or the equivalent.			
T-BUS 108 Shorthand	3	2	4
Theory and speed building. Introduction to office style dictation. Emphasis on development of speed in dictation and accuracy in transcription. Prerequisite: T-BUS 107.			
T-BUS 110 Office Machines	2	2	3
A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the ten-key adding machines, full keyboard adding machines, and calculator. Prerequisite: None.			
T-BUS 112 Filing	3	0	3
Fundamentals of indexing and filing combining theory and practice by the use of miniature letters, filing boxes, and guides. Alphabetic, Triple Check, Automatic, Geographic, Subject, Soundex, and Dewey Decimal filing. Prerequisite: None.			
T-BUS 115 Business Law	3	0	3
A general course designed to acquaint the student with certain fundamentals and principles of business law, including contracts, negotiable instruments, and agencies. Prerequisite: None.			
T-BUS 116 Business Law	3	0	3
Includes the study of laws pertaining to bailments, sales, risk-bearing, partnership—corporation, mortgages, and property rights. Prerequisite: T-BUS 115.			
T-BUS 120 Accounting	5	2	6
Principles, techniques and tools of accounting, for understanding of the mechanics of accounting. Collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned. Prerequisite: T-MAT 110.			
T-BUS 121 Accounting	5	2	6
Partnership and corporation accounting, including a study of payrolls, federal and state taxes. Emphasis is placed on the recording, summarizing and interpreting data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems. Prerequisite: T-BUS 120.			
T-BUS 123 Business Finance	3	0	3
Financing of business units, as individuals, partnerships, corporations, and trusts. A detailed study is made of short-term, long-term, and consumer financing. Prerequisite: None.			

	Class	Lab.	Credit
T-BUS 124 Business Finance	3	0	3
Financing, federal, state, and local government and the ensuing effects upon the economy. Factors affecting supply of funds, monetary and credit policies. Prerequisite: T-BUS 123.			
T-BUS 178 Traffic and Transportation	3	0	3
A introductory course covering the American transportation system. Emphasis is placed on developments leading to the legislative supervision of the carriers, freight traffic territories, traffic flow, freight classifications, freight rates, and freight claims. Prerequisite: None.			
T-BUS 179 Traffic and Transportation	3	0	3
A study of the construction and filing of tariffs, freight rates, terminal facilities, storage, weights, routing, warehousing, and material handling. Prerequisite: T-BUS 178.			
T-BUS 183E Executive Terminology and Vocabulary	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: T-BUS 107.			
T-BUS 183L Legal Terminology and Vocabulary	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: T-BUS 107.			
T-BUS 183M Medical Terminology and Vocabulary	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: T-BUS 107.			
T-BUS 205 Advanced Typewriting	2	3	3
Emphasis is placed on the development of individual production rates. The student learns the techniques needed in planning and in typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter forms, methods of duplication, statistical tabulation, and the typing of reports, manuscripts and legal documents. Prerequisite: T-BUS 104. Speed requirement, 50 words per minute for five minutes.			
T-BUS 206E Executive Dictation and Transcription	3	2	4
Develops the skill of taking dictation and of transcribing at the typewriter materials appropriate to the executive course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Minimum dictation rate of 100 words per minute required for five minutes on new material. Prerequisite: T-BUS 108.			
T-BUS 206L Legal Dictation and Transcription	3	2	4
Develops the skill of taking dictation and of transcribing at the typewriter materials appropriate to the legal course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Minimum dictation rate of 100 words per minute required for five minutes on new material. Prerequisite: T-BUS 108.			
T-BUS 206M Medical Dictation and Transcription	3	2	4
Develops the skill of taking dictation and of transcribing at the typewriter materials appropriate to the medical course of study, which includes a review of the theory and			

the dictation of familiar and unfamiliar material at varying rates of speed. Minimum dictation rate of 100 words per minute required for five minutes on new material. Prerequisite: T-BUS 108.

	Class	Lab.	Credit
T-BUS 207E Executive Dictation and Transcription	3	2	4

Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of business and professional offices. Minimum dictation rate of 110 words per minute required for five minutes on new material. Prerequisite: T-BUS 206E.

T-BUS 207L Legal Dictation and Transcription	3	2	4
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Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of legal and professional offices. Minimum dictation rate of 110 words per minute required for five minutes on new material. Prerequisite: T-BUS 206L.

T-BUS 207M Medical Dictation and Transcription	3	2	4
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Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of medical and professional offices. Minimum dictation rate of 110 words per minute required for five minutes on new material. Prerequisite: T-BUS 206M.

T-BUS 208E Executive Dictation and Transcription	3	2	4
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Principally a speed building course, covering materials appropriate to the executive course of study, with emphasis on speed as well as accuracy. Minimum dictation rate of 120 words per minute required for five minutes on new material. Prerequisite: T-BUS 207E.

T-BUS 208L Legal Dictation and Transcription	3	2	4
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Principally a speed building course, covering materials appropriate to the legal course of study, with emphasis on speed as well as accuracy. Minimum dictation rate of 120 words per minute required for five minutes on new material. Prerequisite: T-BUS 207L.

T-BUS 208M Medical Dictation and Transcription	3	2	4
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Principally a speed building course, covering materials appropriate to the medical course of study, with emphasis on speed as well as accuracy. Minimum dictation rate of 120 words per minute required for five minutes on new material. Prerequisite: T-BUS 207M.

T-BUS 211 Office Machines	2	2	3
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Instructions in the operation of the bookkeeping-accounting machines, duplicating equipment, and the dictating and transcribing machines. Prerequisite: T-BUS 110.

T-BUS 214 Secretarial Procedures	3	2	4
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Designed to acquaint the student with the responsibilities encountered by a secretary during the work day. These include the following: receptionist duties, handling the mail, telephone techniques, travel information, telegrams, office records, purchasing of supplies, office organization, and insurance claims. Prerequisite: None.

T-BUS 215E Executive Office Application	6	0	6
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During the sixth quarter only, students are assigned to work in a business professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the executive course of study. Prerequisites: T-BUS 214, T-BUS 205, T-BUS 208, T-BUS 211.

	Class	Lab.	Credit
T-BUS 215L Legal Office Application	6	0	6
During the sixth quarter only, students are assigned to work in a legal or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the legal course of study. Prerequisites: T-BUS 214, T-BUS 205, T-BUS 208, T-BUS 211.			
T-BUS 215M Medical Office Application	6	0	6
During the sixth quarter only, students are assigned to work in a medical or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the medical course of study. Prerequisites: T-BUS 214, T-BUS 205, T-BUS 208, T-BUS 211.			
T-BUS 217 Business Law	3	0	3
A study of the powers, policies, methods, and procedures used by the various federal, state and local administrative agencies in promoting and regulating business enterprises. It includes a consideration of the constitutional and statutory limitations on these bodies and judicial review of administrative action. Prerequisite: T-BUS 116.			
T-BUS 219 Credit Procedures and Problems	3	0	3
Principles and practices in the extension of credit; collection procedures; laws pertaining to credit extension and collection are included. Prerequisite: T-BUS 120.			
T-BUS 222 Accounting	5	2	6
Thorough treatment of the field of general accounting, providing the necessary foundation for specialized studies that follow. The course includes, among other aspects, the balance sheet, income and surplus investments, and analysis of working capital. Prerequisite: T-BUS 121.			
T-BUS 223 Accounting	5	2	6
Additional study of intermediate accounting with emphasis on investments, plant and equipment, intangible assets and deferred charges, long-term liabilities, paid-in capital, retained earnings, and special analytical processes. Prerequisite: T-BUS 222.			
T-BUS 225 Cost Accounting	3	2	4
Nature and purposes of cost accounting; accounting for direct labor, materials, and factory burden; job cost, and standard cost principles and procedures; selling and distribution cost; budgets, and executive use of cost figures. Prerequisite: T-BUS 121.			
T-BUS 227 Advanced Accounting	3	2	4
Advanced accounting theory and principles as applied to special accounting problems, bankruptcy proceedings, estates and trusts, consolidation of statements, parent, and subsidiary accounting. Prerequisite: T-BUS 223.			
T-BUS 229 Taxes	3	2	4
Application of federal and state taxes to various businesses and business conditions. A study of the following taxes: income, payroll, intangible, capital gain, sales and use, excise, and inheritance. Prerequisite: T-BUS 121.			
T-BUS 232 Sales Development	3	0	3
A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required. Prerequisite: None.			

	Class	Lab.	Credit
T-BUS 233 Personnel Management	3	0	3
Principles of organization and management of personnel, procurement, placement, training, performance checking, supervision, remuneration, labor relations, fringe benefits and security. Prerequisite: None.			
T-BUS 235 Business Management	3	0	3
Principles of business management including overview of major functions of management, such as planning, staffing, controlling, directing, and financing. Clarification of the decision-making function versus the operating function. Role of management in business—qualifications and requirements. Prerequisite: None.			
T-BUS 237 Wholesaling	3	0	3
The development of wholesaling; present day trends in the United States. A study of the functions of wholesaling. Prerequisite: None.			
T-BUS 239 Marketing	5	0	5
A general survey of the field of marketing, with a detailed study of the functions, policies, and institutions involved in the marketing process. Prerequisite: None.			
T-BUS 243 Advertising	3	2	4
The role of advertising in a free economy and its place in the media of mass communications. A study of advertising appeals; product and market research; selection of media; means of testing effectiveness of advertising. Theory and practice of writing advertising copy for various media. Prerequisite: None.			
T-BUS 245 Retailing	3	0	3
A study of the role of retailing in the economy including development of present retail structure, functions performed, principles governing effective operation and managerial problems resulting from current economic and social trends. Prerequisite: None.			
T-BUS 247 Business Insurance	3	0	3
A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included. Prerequisite: None.			
T-BUS 255 Interpreting Accounting Records	3	0	3
Designed to aid the student in developing a "use understanding" of accounting records, reports and financial statements. Interpretation, analysis, and utilization of accounting statements. Prerequisite: T-BUS 121.			
T-BUS 266 Budget and Record Keeping	3	0	3
The basic principles, methods, and procedures for preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning. Prerequisite: T-BUS 121.			
T-BUS 269 Auditing	3	2	4
Principles of conducting audits and investigations; setting up accounts based upon audits; collecting data on working papers; arranging and systemizing the audit, and writing the audit report. Emphasis is placed on detailed audits, internal auditing, and internal control. Prerequisite: T-BUS 223.			
T-BUS 271 Office Management	3	0	3
Presents the fundamental principles of office management. Emphasis on the role of office management including its functions, office automation, planning, controlling, organizing and actuating office problems. Prerequisite: None.			

	Class	Lab.	Credit
T-BUS 272 Principles of Supervision	3	0	3
Introduces the basic responsibilities and duties of the supervisor and his relationship to superiors, subordinates, and associates. Emphasis on securing an effective work force and the role of the supervisor. Methods of supervision are stressed. Prerequisite: None.			
T-BUS 280 Traffic and Transportation	3	0	3
Stresses through-route and rates, milling in transit, technical tariff and rate interpretation, overcharges and undercharges, loss and damage, import and export tariff, classification committee procedure, and rate committee procedures. Prerequisite: T-BUS 179.			
T-BUS 281 Traffic and Transportation	3	0	3
To acquaint the student with the application of the Interstate Commerce Act to practical transportation and the general procedure of requesting changes before the Interstate Commerce Commission. Prerequisite: T-BUS 280.			
T-BUS 284M Medical Terminology and Vocabulary	3	0	3
Greater emphasis on an understanding of the terminology and vocabulary appropriate to the medical course of study, as it is used in medical and professional offices. Prerequisite: T-BUS 183M.			
T-BUS 285 ICC Law	3	0	3
Designed to aid the student in making a thorough analysis of the Interstate Commerce Act; review history of Act and related acts. Prerequisite: T-BUS 116.			
T-BUS 286 ICC Law	3	0	3
A detailed study is made of the procedural policy involved in appearing before the Interstate Commerce Commission. Prerequisite: T-BUS 285.			
T-BUS 287 ICC Law	3	0	3
Devoted to case study of applications of the Interstate Commerce Act. Prerequisite: T-BUS 286.			
T-BUS 290 Motor Carrier	3	0	3
An introduction to special problems relating to tariffs and rates of motor carriers. Prerequisite: None.			
T-BUS 291 Motor Carrier	3	0	3
A continuation of special problems relating to tariffs, rates, circulars, pertaining to the Motor Carrier field. Prerequisite: T-BUS 290.			
T-BUS 295 Traffic Claims	3	0	3
Designed to provide knowledge about rights and liabilities of carriers, cosigners, and co-signees; claims, their procedure, settlement, and prevention. Prerequisite: None.			
T-BUS 299 Traffic Management	3	0	3
Develops the purpose, function, and operation of traffic management; illustrates the differences in various areas of traffic; and shows relationship to other business operations. Prerequisite: None.			

CHEMISTRY

T-CHM 101 Chemistry	4	2	5
Study of the physical and chemical properties of substances, chemical changes; elements, compounds, gases, chemical combinations; weights and measurements; theory of metals; acids, bases, salts, solvents, solutions, and emulsions. In addition, study of carbohydrates; electrochemistry, electrolytes, and electrolysis in their application of chemistry to industry. Prerequisite: T-MAT 101.			

CIVIL ENGINEERING

	Class	Lab.	Credit
T-CIV 101 Surveying	2	6	4
Theory and practice of plane surveying including taping, differential and profile leveling, cross sections, earth work computations, transit, standia, and transit-tape surveys. Prerequisites: T-MAT 102, T-DFT 107.			
T-CIV 102 Surveying	2	6	4
Triangulation of ordinary precision; use of plane table, calculation of areas of land; land surveying; topographic surveys and mapping. Prerequisite: T-CIV 101. Corequisites: T-MAT 102, T-DFT 102.			
T-CIV 105 Architectural Materials and Methods	3	3	4
Materials used in the construction of architectural structures will be studied. Field trips to construction sites and study of manufacturer's specifications for materials. Properties and standard sizes of structural materials, and construction techniques are included. Prerequisite: None.			
T-CIV 114 Statics	5	0	5
Forces, resultants, and types of force systems, moments, equilibrium of coplanar forces by analytical and graphic methods; stresses and reactions in simple structures; equilibrium of forces in space, static and kinetic friction; center of gravity, centroids, and moment of inertia. Prerequisite: T-MAT 102.			
T-CIV 201 Properties of Engineering Materials	2	3	3
Study and testing of the properties of ferrous and nonferrous metals, timber, stone, clay products, bituminous cementing materials; load and strain measurements; behavior of materials under load; qualities other than strength; control of the properties of the materials; non-destructive tests. Prerequisite: T-PHY 101. Corequisite: T-CIV 216.			
T-CIV 202 Properties of Soils	2	3	3
Study of soil types and their physical properties; mechanical analysis and tests of soils; techniques of subsurface investigation; earth pressure theories; bearing capacity; stability of slopes; hydrostatics of ground water; methods of compaction and consolidation. Prerequisite: T-CIV 216.			
T-CIV 216 Strength of Materials	3	2	4
Fundamentals stress and strain relationship; torsion; shear and bending moments; stresses and deflections in beams; introduction to statically indeterminate beams; columns; combined stresses. Prerequisites: T-CIV 114, T-MAT 103.			
T-CIV 217 Construction Methods and Equipment	3	2	4
Excavating methods and equipment used in building and highway construction; pile driving; construction techniques and equipment used in reinforced concrete buildings, bridges, lift-slabs, thin-shells and folded plates, erection methods and equipment of structural steel buildings and bridges; carpentry in house and heavy timber construction; construction safety. Field inspection trips. Prerequisites: T-DFT 102, T-CIV 102.			
T-CIV 218 Plain Concrete	3	3	4
Study and testing of the composition and properties of concrete including cementing agents, aggregates, admixtures, and air-entrainment; design and proportioning of concrete mixes to obtain pre-determined strengths and properties; methods of placing and curing concrete; standard control tests of concrete. Corequisite: T-CIV 201.			

	Class	Lab.	Credit
T-CIV 219 Steel and Timber Construction	3	2	4
Analysis and basic design of steel beams, tension members, columns, and riveted, high strength bolted, welded connections; study of plate girders, industrial building roofs and vents, continuous spans, lightweight steel construction; use of American Institute of Steel Construction Manual; introduction to rigid frames and plastic design in steel. Design of timber members and their connections. Field inspection trips. Prerequisite: T-CIV 216.			
T-CIV 221 Reinforced Concrete Construction	3	2	4
Analysis and design of reinforced concrete beams, floor systems, and columns. Use of CRSI Design Handbook. Introduction to ultimate strength design. Principles of pre-stressed and precast concrete. Field inspection trips. Prerequisite: T-CIV 216.			

DRAFTING AND DESIGN

T-DFT 101 Technical Drafting	0	6	2
The field of drafting is introduced as the student begins study of drawing principles and practices for print reading and describing objects in the graphic language. Basic skills and techniques of drafting included are: use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, orthographic instrument drawing of principle views, and standards and practices of dimensioning. The principles of isometric, oblique, and perspective are introduced. Prerequisite: None.			
T-DFT 102 Technical Drafting	0	6	2
The application of orthographic projection principles to the more complex drafting problems, primary and secondary auxiliary views, simple and successive revolutions, and sections and conventions will be studied. Most important is the introduction of the graphical analysis of space problems. Problems of practical design elements involving points, lines, planes, and a combination of these elements shall be studied. Dimensioning practices for "details" and "working drawings," approved by the American Standards Association, will also be included. Introduction is given to intersections and developments of various types of geometrical objects. Prerequisite: T-DFT 101.			
T-DFT 103 Technical Drafting	0	6	2
Intersection and developments and their practical solutions. Where applicable, model solutions accompany the problems. The various techniques employed to produce and render isometric and oblique drawings, isometric, dimetric and trimetric projections, will be included. Prerequisite: T-DFT 102.			
T-DFT 105 Technical Drafting	2	6	4
Intersections and developments and their practical applications to pattern drawing, with model solutions. Mechanical and freehand techniques used to produce isometric, dimetric, trimetric, and perspective drawings incorporating basic rendering techniques. Charts, graphs and other methods of visual presentation are included. Prerequisite: T-DFT 102.			
T-AHR 106 Architectural Mechanical Equipment	3	3	4
General study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code requirements pertaining to residential and commercial structures. Reading and interpretation of working drawings by mechanical engineers. Coordination of mechanical and electrical features with structural and architectural designs. Prerequisite: None.			

	Class	Lab.	Credit
T-DFT 106 Architectural Drafting	2	6	4
A course designed to provide fundamental knowledge of the principles of drafting. Basic skills and techniques of drafting included are: use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, orthographic instrument drawing of principal views. Projection problems dealing with principles of descriptive geometry, involving points, lines, planes, and connectors. The principles of isometric, oblique, and perspective drawings are introduced. Prerequisite: None.			
T-DFT 107 Architectural Drafting	2	6	4
Development of techniques in architectural lettering, symbols, and their interpretation; dimensioning, freehand and instrument drafting. Drawing of construction details, using appropriate material symbols and connections. Sections, scale details and full-size details will be prepared from preliminary sketches. Applications of descriptive geometry are used in visualization and analytical solutions of the drafting problems involving auxiliary views, intersections and developments. Prerequisite: T-DFT 106.			
T-DFT 108 Architectural Drafting	0	9	3
An approach in depth to the study of architectural drafting. Development of techniques in architectural lettering, dimensioning, freehand sketching and instrument drawing. Drawings of construction details, using appropriate material symbols and conventions. Working drawings, including plans, elevations, sections, scale details and full-size details will be prepared from preliminary sketches. Prerequisites: T-DFT 107, T-AHR 106, T-CIV 105.			
T-DES 116 Design Philosophy	3	0	3
This course will consist of selected readings and discussions of viewpoints, philosophies, and observations of leading designers. The existing dilemma concerning design ethics shall be incorporated. Prerequisite: None.			
T-DES 117 Visual Design I	2	6	4
A study of design fundamentals to include the elements of design construction, the principles which determine the organization and relationship of these elements, and the analysis of design. Application of these fundamentals in drawing and elementary design problems leading to an understanding of form and space, primarily two-dimensional. Prerequisite: None.			
T-DES 118 Visual Design II	3	3	4
An extension of Visual Design I dealing with problems of two-dimensional manipulation and delineation of space. Particular emphasis is placed on the nature of color, color chords, organization, composition, optical and psychological implications. Prerequisite: T-DES 117.			
T-DFT 201 Technical Drafting	2	6	4
Applications and constructions of charts, graphs, and nomographs in engineering and technical data. Screw threads, springs, keys, rivets, piping, and welding symbols, methods of representing and specifying will be covered. Basic mechanisms of motion transfer, gears and cams, will be studied and drawn with emphasis on methods of specifying, calculating, dimensions, and delineating. Prerequisite: T-DFT 103.			
T-DFT 204 Descriptive Geometry	2	4	4
Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem. Prerequisites: T-DFT 102, T-MAT 102.			

	Class	Lab.	Credit
T-DFT 205 Design Drafting I	2	6	4
Basic design is introduced in the study of motion transfer mechanisms as they relate to power trains. Principles of design sketching, design drawing, layout drafting, detailing from layouts, production drawings and simplified drafting practices constitute areas of study. Types and methods of specifying materials and workmanship are an integral part of the course. Prerequisites: T-DFT 204, T-MAT 102, T-PHY 102.			
T-DFT 206 Design Drafting II	2	6	4
Research to solve a problem in design by consulting various manuals, periodicals, and through laboratory experiments. A written technical report, preliminary design sketches, layout drawings, detail drawings, assembly and sub-assembly drawings, pictorial drawings, exploded pictorial assembly, patent drawings and specifications are required as a part of the problem. Prerequisites: T-DFT 205, T-DFT 201.			
T-DFT 211 Mechanisms	3	2	4
Mathematical and drafting room solutions of problems involving the principles of machine elements. Study of motions of linkages, velocities and acceleration of points within a link mechanism; layout methods for designing cams, belts, pulleys, gears and gear trains. Prerequisites: T-DFT 201 & 204, T-MAT 103, T-PHY 106.			
T-DFT 212 Jig and Fixture Design	2	6	4
Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with the types of jigs and fixtures. Prerequisite: T-DFT 205, T-DFT 211.			
T-DES 216 Tectonic Design	3	3	4
An exploration of three-dimensional design using a variety of materials to define space and mass as they relate to function and aesthetics. Experiments in construction and ornamentation will be an integral part of the course. Prerequisite: T-DES 117.			
T-DFT 220 Architectural Drafting	2	9	5
Drawing of structural plans and details as prepared for building construction including steel, concrete, and timber structural components. Appropriate details and drawings necessary for construction and fabrication of structural members. Reference materials will be used to provide the draftsman with skills and knowledge in locating data and in using handbooks. Prerequisite: T-DFT 108.			
T-DFT 221 Architectural Drafting	2	9	5
Drawing of plans and details as prepared for mechanical equipment such as air conditioning, plumbing and electrical systems by using appropriate symbols and conventions. Consideration is given to coordination of mechanical and electrical features with structural and architectural components. Prerequisite: T-DFT 220.			
T-DFT 222 Architectural Drafting	2	9	5
Preparation of the complete set of working drawings for the architectural structure. Preparation of millwork drawings, cabinets and built-in equipment detail drawings, and door, window, and room schedules. Site and landscaping plans will be studied and drawn. Final assembly of the complete document for construction purposes will be made. Prerequisites: T-DFT 221, T-CIV 101, T-DFT 235.			
T-DES 225 Furniture Styling	2	3	3
A comprehensive study of the periods and styles of furniture, from the Gothic Period to contemporary innovations, including factors which influenced their development. Methods of styling and decorating will be incorporated with the basic principles of design. Prerequisite: None.			

	Class	Lab.	Credit
T-DFT 230 Structural Drafting	2	6	4
A concentrated study and drawing of structural plans, details and shop drawings of the structural components of buildings to include steel, reinforced concrete, and timber structures. Appropriate symbols, conventions, dimensioning practices, and notes as used by the draftsman will be included. Emphasis will be placed on drafting of appropriate drawings for fabrication and erection of the structural components. Prerequisites: T-DFT 220, T-CIV 105.			
T-DFT 231 Architectural Mechanical Equipment Drafting	2	6	4
A detailed study of mechanical equipment and preparation of plans and detail drawings as prepared by the mechanical engineering consultant or contractor for the architectural structure. Heating and air conditioning, lighting and electrical, plumbing and other mechanical equipment as necessary for construction will be included in this study. Emphasis will be placed on drafting techniques used in preparing appropriate drawings and details. Prerequisites: T-DFT 221, T-AHR 106.			
T-DFT 233 Office Practice Seminar	2	0	2
A study of the professional relationship of the architectural firm in relation to clients, contractors, suppliers, consultants and other architects. Ethics of the profession as applicable to the draftsman's roll in the architectural firm will be stressed. Prerequisite: None.			
T-DFT 235 Codes, Specifications and Contract Documents	3	3	4
A study of building codes and their effect in relation to specifications and drawings. The purpose and writing of specifications will be studied along with their legal and practical application to working drawings. Contract documents will be analyzed and studied for the purpose of client-architect-contractor responsibilities, duties and mutual protection. Prerequisite: T-DFT 220.			
T-DFT 236 Construction Estimating and Field Inspection	3	3	4
Interpretation of working drawings for a project; preparation of material and labor quantity surveys from plans and specifications; approximate and detailed estimates of cost. The student will study materials take-off, labor take-off, sub-contractors' estimates, overhead costs, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Prerequisite: T-DFT 235.			
T-DES 239 Rendering	2	3	3
This course will include techniques of heightening the three-dimensional effects of both pictorial and orthographic drawings through the use of variation in value, texture, and color. Additional depth of experience will be gained in preparing presentation pictorials. Prerequisite: T-DFT 105.			
T-DFT 240 Furniture Drafting	2	6	4
The student will become familiar with the types of drawings used in furniture making, general types of furniture based on function and market, including built-in. Preliminary sketches will be followed by simple assembly-details and detail drawing of typical constructions for cases, frames, drawers, doors and seating pieces. Prerequisite: T-DFT 105.			
T-DFT 241 Furniture Design Drafting	2	6	4
The student will pursue the more complex detailing problems involving construction, carving delineations and less traditional materials such as formed plywood, plastics and			

metals. Specifications and bills of materials will be included. Prerequisites: T-DFT 240, T-DES 118.

	Class	Lab.	Credit
T-DFT 242 Furniture Design Drafting	2	6	4

Research to solve the design problem of developing a correlated furniture group using any necessary experiments and reference sources. A written report outlining and defining the entire project accompanied by preliminary sketches, presentation drawings, selected finished details and specifications is required as a part of the problem. Prerequisites: T-DFT 241, All Design Courses.

T-DES 245 Anatomical Relationships	5	0	5
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This course is a comprehensive study of the human form as it relates to objects and activities of work, family living, and circulation. Emphasis is placed on the implications found for furniture and interior design. Prerequisite: None.

T-DFT 249 Merchandising Graphics	3	2	4
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A study of graphic arts media, techniques, layout, type, and reproduction methods applicable to direct mail, display art, newspaper, magazine, catalog, tags, labels, etc. Prerequisite: None.

T-DES 250 Interior Planning and Display	3	3	4
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This course is a study of architectural considerations, furniture grouping, correlation of finish, fabrics, and accessories as related to customer services and show room planning. Prerequisites: T-DES 118, T-DFT 105, T-DES 239, T-DES 245.

ECONOMICS

T-ECO 102 Economics	3	0	3
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The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large. Prerequisite: None.

T-ECO 104 Economics	3	0	3
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Greater depth in principles of economics, including a penetration into the composition and pricing of national output, distribution of income, international trade and finance, and current economic problems. Prerequisite: T-ECO 102.

T-ECO 106 Economics of Transportation	3	0	3
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Acquaints the student with the economic aspects of transportation. Complete discussion from the earliest form of basic transportation to our present complex system of transportation. In addition to the historical approach, consideration is given to the economic factors involved in plant location and principles involved in present-day developments of transportation. Prerequisite: T-ECO 102.

T-ECO 108 Consumer Economics	3	0	3
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Designed to help the student use his resources of time, energy, and money to get the most out of life. It gives the student an opportunity to build useful skills in buying, managing his finances, increasing his resources, and to understand better the economy in which he lives. Prerequisite: None.

ELECTRONICS-ELECTRICITY

	Class	Lab.	Credit
T-ELC 101 Fundamentals of Electricity	4	4 or 6	6
Elementary principles of electricity including: basic electric units, Ohm's Law, Kirchhoff's Law, network theorems, magnetics, basic electrical measuring instruments, inductance, capacitance, sine wave analysis, and non-resonant resistive, inductive and capacitive networks. Prerequisite: None.			
T-ELC 102 Fundamentals of Electricity	4	4 or 6	6
Series and parallel resonant-circuit analysis, resonant and non-resonant transformer analysis, basic diode power supply analysis, introduction to non-linear resistive control devices, and introduction to electro-mechanical devices. Prerequisite: T-ELC 101.			
T-EDP 104 Introduction to Electronic Data Processing Systems	3	2	4
A study of the fundamental concepts and operational principles of data processing system. They are presented as an aid in developing a basic knowledge of computers as a prerequisite to the detail study of a particular system. This course also provides a general knowledge of computing systems and is a prerequisite for all programming courses. Prerequisite: None.			
T-ELC 201 Electrical Machinery	3	0	3
A course in the basic understanding and application of electricity to modern industrial machinery. Included is a study of direct current motors, motor controls and protecting devices, transformers, and the industrial applications of this equipment. Prerequisite: T-PHY 103.			
T-ELC 210 Rotating Devices	2	2	3
Introduction to electrical machinery. AC and DC motor and generator principles, synchros and servomechanisms, alternators and dynamotors, Ward-Leonard and amplidyne control systems will be analyzed. A general knowledge of the theory, operation, and maintenance of these devices and systems will be stressed. Prerequisites: T-ELC 102, T-PHY 102.			
T-ELN 101 Electronic Instruments and Measurements	1	4 or 6	3
A study of basic electronic instruments, their theory of operation, function, tolerances, and calibration. Both service and laboratory instruments will be studied. Laboratory experience will provide application of each type instrument studied. Prerequisite: T-ELC 102.			
T-ELN 105 Control Devices	5	4 or 6	7
A study in depth of the electrical characteristics of vacuum tubes and transistors. Basic parameters and applications of each type device to the three configurations of a three terminal two port system will be included. Prerequisite: T-ELC 102.			
T-ELN 201 Industrial Controls	3	2	4
Industrial controls is the study of modern methods of controlling machinery by electronic circuitry. Machinery controls and electronic mechanisms that automatically operate machines will be studied. Types of motors, generators, control signals and devices, thyatrons, gates, switches, and servomechanism circuits are major areas of study. Prerequisite: T-PHY 103.			

	Class	Lab.	Credit
T-ELN 205 Applications of Vacuum Tubes and Transistors	5	4 or 6	7
Practical applications of vacuum tubes and transistors to basic audio amplifiers, radio frequency amplifiers, detectors, modulators and oscillators. Prerequisite: T-ELN 105.			
T-ELN 210 Semiconductor Circuit Analysis	5	2 or 3	6
A study in some depth of the analysis and design of transistor circuits. Network theorems and equivalent circuits are used extensively in evaluating total circuit performance. Device peculiarities and limitations pertinent to reliable operations are considered. H. Y. Z. and T. parameters are employed as well as signal-flow graphs. Prerequisite: T-ELN 105.			
T-ELN 214 Wave Shaping and Pulse Circuits	2	2 or 3	3
Broadband amplifiers, magnetic amplifiers, multivibrators, wave shaping techniques, chopper amplifiers, clipper and clamper circuits. Prerequisites: T-ELN 105, T-MAT 103.			
T-ELN 215 Wave Shaping and Pulse Circuits	2	2 or 3	3
Pulse techniques, diode switches, gates, step-counters, restorers and other specific circuits which function as switches. Prerequisite: T-ELN 214.			
T-ELN 225 Transmission and Propagation	3	0	3
An introduction to the electromagnetic radiation, principles of antenna, radiation patterns and field strength. The characteristics and use of transmission lines in radio frequency application. Factors involved in propagation, ground waves, reflections, sky waves, atmospheric effects, ionosphere, fading, noise, static, wire radiators, directive gain, effect of ground, impedance, antenna systems and arrays. Prerequisite: T-ELN 105. Corequisite: T-ELN 205.			
T-ELN 227 UHF and Microwave Systems	5	4	7
A study of UHF and VHF components, circuits, and measurement techniques. The use of distributed constant elements, waveguides and coaxial cables, microwave links, high frequency oscillators, magnetrons, klystrons, traveling wave tubes. An introduction to the use of the Smith Chart. Prerequisite: T-ELN 225.			
T-ELN 230 Television Systems	4	6	7
A study of the principles of television including the television system, camera tubes, scanning and synchronization, composite video signal, receiver circuits, transmitting equipment, color television, and closed-loop systems. Corequisite: ELN 214.			
T-ELN 235 Industrial Instrumentation	4	6	7
Broad introduction to use of industrial electro-mechanical and electronic circuits and equipment. Provides an understanding of the methods, techniques, and skills required for installation, service and operation of a variety of industrial control systems. Analysis of sensing devices for detecting changes in pressure, temperature, humidity, sound, light, electricity, the associated circuitry and indicating and recording devices. Prerequisites: T-ELN 205, T-PHY 104.			
T-ELN 240 Digital Computers	3	0	3
An exploration into the methodology of counting and computing. Various computer techniques will be investigated including: non sinusoidal waveforms, binary and decade counters, industrial counters, readout devices, logic circuits, arithmetic circuits, storage devices, input-output devices, computer control, analog and digital converters. Prerequisite: T-ELN 214.			

	Class	Lab.	Credit
T-ELN 245 Electronic Design Project	0	4	2

Students are required to design and construct a project approved by the instructor. Includes selection of project, design, construction, and testing of completed project. Projects may include: AM or FM transmitters or receivers, amplifiers, test equipment, control devices, simple counters, lasers, masers, etc. Prerequisite: T-ELN 205.

ENGLISH

T-ENG 101 Grammar	3	0	3
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Designed to aid the student in the improvement of self-expression in grammar. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life. Prerequisite: None.

T-ENG 102 Composition	3	0	3
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Designed to aid the student in the improvement of self-expression in business and technical composition. Emphasis is on the sentence, paragraph, and whole composition. Prerequisite: T-ENG 101.

T-ENG 103 Report Writing	3	0	3
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The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. This report must have to do with something in his chosen curriculum. Prerequisite: T-ENG 101.

T-ENG 204 Oral Communication	3	0	3
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A study of basic concepts and principles of oral communications to enable the student to communicate with others. Emphasis is placed on the speaker's attitude, improving diction, voice, and the application of particular techniques of theory to correct speaking habits and to conducting meetings, conferences, and interviews. Prerequisite: T-ENG 101.

T-ENG 206 Business Communication	3	0	3
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Develops skills in techniques of writing business communications. Emphasis is placed on writing action—getting sales letters and prospectuses. Business reports, summaries of business conferences, letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry. Prerequisite: T-ENG 101.

FURNITURE

T-UPH 101 Furniture Processes	3	3	4
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A comprehensive study of materials and methods of furniture manufacturing. Classification, characteristics, and uses of wood species, veneer and manufactured board processes and uses will be studied. Production wood working operations and methods using circular saws, jointer, planer, band saw, jig saw, drill press, lathe, shaper, router and portable hand tools will be explored. Wood joints, gluing processes, fasteners and assembly procedures will be included. Prerequisite:

T-UPH 102 Furniture Processes	3	3	4
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The preparation of woods, types of finishes and their application, equipment and processes will be studied. Procedures for joining wood and other commonly used ma-

terials and appliques are included. Forms of upholstery, equipment, materials and processes will be explored. Functional and decorative hardware and mechanisms will be studied. Prerequisite: T-UPH 101.

Class Lab. Credit

INDUSTRIAL SCIENCE

T-ISC 201 Industrial Organization and Management 3 0 3
Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations. Prerequisite: None.

T-ISC 215 Plant and Production Planning 3 2 4
Principles of plant planning dealing with equipment placement for production flow, versatility and optimum effectiveness. In-plant and inter-plant traffic, routing, and communications will be studied. Prerequisite: None.

T-ISC 216 Product Development 3 0 3
This course of study is to familiarize the student with product development as it relates to the complete manufacturing organization. The evolution from original idea to retailer involving sales, design and engineering, cost, plant production, shipping, and outside agencies. Prerequisite: None.

MATHEMATICS

T-MAT 101 Technical Mathematics 5 0 5
The real number system is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed. Prerequisite: Satisfactory evidence that admission requirements have been met.

T-MAT 102 Technical Mathematics 5 0 5
A continuation of T-MAT 101. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MAT 101.

T-MAT 103 Technical Mathematics 5 0 5
The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MAT 102.

T-MAT 110 Business Mathematics 5 0 5
This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business. Prerequisite: None.

T-MAT 201 Technical Mathematics 5 0 5
A continuation of T-MAT 103. More advanced concepts of differentiation and integration are considered. Included are graphs and derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration

	Class	Lab.	Credit
techniques, polar equations, parametric equations, and Fourier series. Prerequisite: T-MAT 103.			

**T-MAT 202 Calculus and Laplace Transforms
 For Electronics**

5	0	5
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An investigation of the methods of calculus which are of the most direct use in the study of electronic circuits. Introduction to selected topics from differential equations and Laplace transforms and applications of these methods to the solution of electronic circuit problems. Prerequisite: T-MAT 201. Corequisite: T-ELN 214.

MECHANICAL

T-MEC 101 Machine Processes

0	6	2
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An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes of our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming. Prerequisite: None.

T-MEC 102 Machine Processes

0	6	2
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Advanced operations on lathe, drilling, boring and reaming machines. Milling machine theory and practice. Thorough study of the types of milling machines, cutters, jig and fixture devices, and the accessories used in a modern industrial plant. Safety in the operational shop is stressed. Prerequisite: T-MEC 101.

T-MEC 110 Fundamental Mechanisms

2	4	4
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A study of the purpose and actions of cams, cables, gear trains, differentials, screws, belts, pulleys, shafts, levers, and other mechanical devices used to transmit or control signals. Prerequisite: T-PHY 102.

T-MEC 205 Strength of Materials

3	2	4
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Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such as static, impact, varying and dynamic. Analyses of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components. Prerequisites: T-PHY 106, T-MAT 103.

T-MEC 210 Physical Metallurgy

3	3	4
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Introductory course in metallurgy, a basic study of the properties of metals and alloys. Analysis of the structure of metals and alloys, atomic structure, nuclear structure, and nuclear reactions. Solid (crystalline) structures, methods of designating crystal planes; liquid and vapor phases; phase diagrams; and alloy systems. Prerequisite: T-PHY 101.

T-MEC 211 Physical Metallurgy

3	3	4
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Properties of metals and alloys, the reactions of metals, diffusion, carburizing, metal bonding and homogenization; recrystallization and grain growth, age hardening, nitriding, internal oxidation; heat treatment of steel; laboratory experiments and demonstrations. Prerequisite: T-MEC 210.

T-MEC 235 Hydraulics and Pneumatics

2	3	4
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The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electro-hydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs. Prerequisite: T-PHY 102.

T-MEC 237 Control Systems	Class 2	Lab. 4	Credit 4
Hydraulic, pneumatic, mechanical, electrical and electronic control systems and components. Basic description, analysis and explanation of operation. Typical performance characteristics, limitations on performance, accuracy, applications and their utilization in industrial processes. Prerequisites: T-PHY 103, T-PHY 205.			

PHYSICS

T-PHY 101 Physics: Properties of Matter	3	2	4
A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids at rest and in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course. Prerequisite: None.			
T-PHY 102 Physics: Work, Energy, Power	3	2	4
Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisites: T-PHY 101, T-MAT 101.			

T-PHY 103 Physics: Electricity	3	2	4
Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisites: T-MAT 101, T-PHY 101.			

T-PHY 104 Physics: Light and Sound	3	2	4
A survey of the concepts involving wave motion leads to a study of sound, its generation, transmission and detection. The principles of wave motion also serve as an introduction to a study of light, illumination and the principles involved in optical instruments. Application is stressed throughout. Prerequisites: T-MAT 101, T-PHY 101.			

T-PHY 106 Applied Mechanics	5	0	5
Concepts and principles of statics and dynamics. Parallel concurrent and noncurrent force systems in coplanar and noncoplanar situations. Concepts of centroids and center of gravity, moments of inertia, fundamentals of kinetics, and kinematics of velocity and motion. Prerequisites: T-MAT 103, T-PHY 102.			

POLITICAL SCIENCE

T-POL 201 United States Government	3	0	3
A study of government with emphasis on basic concepts, structure, powers, procedures and problems. Prerequisite: None.			

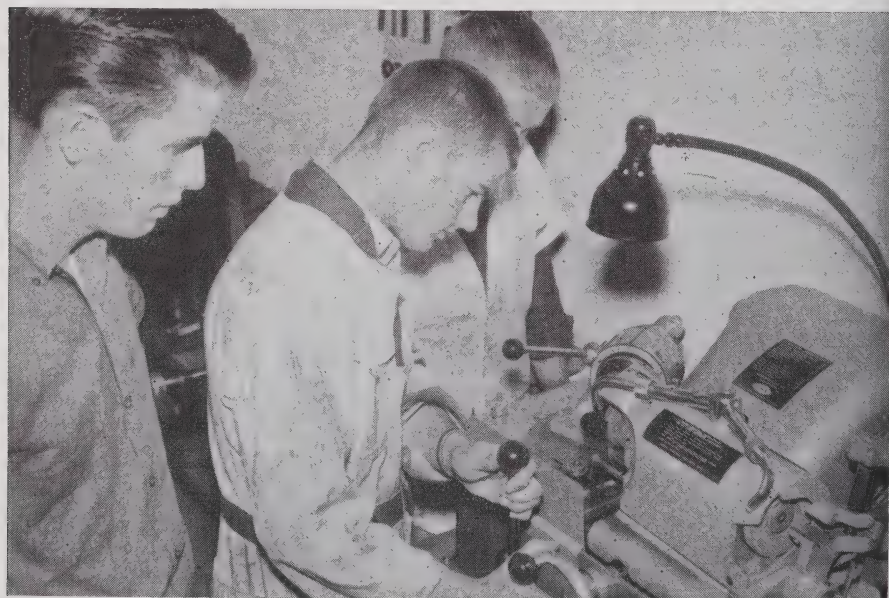
PSYCHOLOGY

T-PSY 112 Personality Development	3	0	3
Designed to help the student recognize the importance of the physical, intellectual, social, and emotional dimensions of personality. Emphasis is placed on grooming and methods of personality improvement. Prerequisite: None.			

	Class	Lab.	Credit
T-PSY 206 Applied Psychology	3	0	3
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community. Prerequisite: None.			

SOCIAL SCIENCE

	Class	Lab.	Credit
T-SSC 201 Social Science	3	0	3
An integrated course in the social sciences, drawing from the fields of anthropology, psychology, history, and sociology. Prerequisite: None.			
T-SSC 202 Social Science	3	0	3
A further study of social sciences with emphasis on economics, political science, and social problems as they relate to the individual. Prerequisite: T-SSC 201.			
T-SSC 205 American Institutions	3	0	3
A study of the effect of American social, economic, and political institutions upon the individual as a citizen and as a worker. The course dwells upon current local, national, and global problems, viewed in the light of our political and economic heritage. Prerequisite: None.			
T-SSC 207 Rural Society	3	0	3
A study of selected elements of rural sociology with emphasis on current social changes. The course provides a sociological background for the understanding of rural social changes. Areas of study include rural culture, group relationships, social classes, rural and suburban communities, farm organizations, the communication of agricultural technology, rural social problems, agricultural adjustment and population change. Prerequisite: None.			



VOCATIONAL-TRADE PROGRAMS

AUTOMOTIVE MECHANICS

There will be many thousands of job openings for automobile mechanics during the 1965-75 decade. Deaths and retirements alone are expected to provide about 10,000 job openings each year. This need is noted locally as well as throughout the United States.

This course provides a training program for developing the basic knowledge and skills needed to inspect, diagnose, repair, or adjust automotive vehicles. Manual skills are developed in practical shop work. Thorough understanding of the operating principles involved in the modern automobile comes in class assignments, discussion, and shop practice.

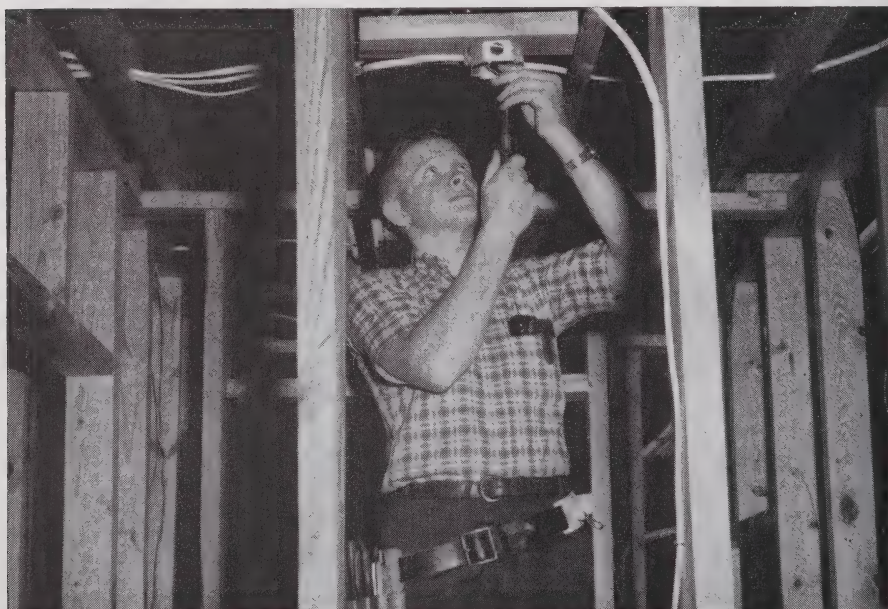
CVTI automotive graduates maintain and repair mechanical, electrical, and body parts of passenger cars, trucks, and buses. They also may service tractors, marine engines, or other gasoline-powered equipment. As mechanics, they inspect and test to determine the causes of faulty operation. They repair or replace defective parts to restore the vehicle or machine to proper operating condition. They use shop manuals and other technical publications. Graduates in smaller shops usually are general mechanics qualified to perform a variety of repair jobs. A large number of automotive mechanics specialize in particular types of repair work, such as power steering and power brakes, or automatic transmissions. Usually such specialists have an all-round knowledge of automotive repair and may occasionally be called upon to do other types of work. Some graduates may open their own shops, become service managers, sales, and/or automotive parts personnel. Thus, opportunities for advancement and above-average-salaries are open for the qualified graduate of the CVTI automotive program.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week Class	Lab.	Quarter Hours Credit
FIRST QUARTER					
PME	1101	Internal Combustion Engines	3	12	7
MAT	1101	Fundamentals of Mathematics	5	0	5
ENG	1101	Reading Improvement	2	0	2
PHY	1101	Applied Science	3	2	4
			13	14	18
SECOND QUARTER					
PME	1102	Engine Electrical and Fuel Systems	5	12	9
ENG	1102	Communication Skills	3	0	3
DFT	1101	Schematics and Diagrams: Power Mechanics	0	3	1
PHY	1102	Applied Science	3	2	4
			11	17	17

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
THIRD QUARTER					
AUT	1123	Automotive Chassis and Suspension Systems	3	9	6
AUT	1121	Braking Systems	3	3	4
PSY	1101	Human Relations	3	0	3
AHR	1101	Automotive Air Conditioning	2	3	3
			11	15	16
FOURTH QUARTER					
AUT	1124	Automotive Power Train Systems	3	9	6
AUT	1125	Automotive Servicing	3	9	6
BUS	1103	Small Business Operations	3	0	3
			9	18	15
FIFTH QUARTER					
PME	1103	Diesel Engine Servicing	3	9	6
PME	1144	Power Trains	3	9	6
PME	1145	Chassis and Suspension Systems	3	9	6
			9	27	18

COURSE DESCRIPTIONS BEGIN PAGE 78



ELECTRICAL INSTALLATION AND MAINTENANCE

The rapid expansion of the national economy and the increasing development of new electrical products is providing a growing need for qualified people to install and maintain electrical equipment. By mid-1960 more than 350,000 were employed as either construction electricians or maintenance electricians. Between 5,000 and 10,000 additional tradesmen are required

each year just to replace those leaving the industry. It is expected that the total requirements for electrical tradesmen will reach 700,000 by 1970. The shortage of electricians is certainly noted in this local area also. Qualified licensed electricians are among the highest paid construction workers in the United States.

This course will provide a training program in the basic knowledge, fundamentals, and practices involved in the electrical trades. A large portion of the program is devoted to laboratory and shop instruction which is designed to give the student practical knowledge and application experience in the fundamentals taught in class.

The graduate of the Electrical Installation and Maintenance Program will be qualified to enter the electrical trades where he will assist in the planning, lay-out, installation, check-out, and maintenance of systems in residential, commercial, or industrial plants. He will have an understanding of the fundamentals of the National Electrical Code regulations as related to wiring installations, electrical circuits, and the measurements of voltage, current, power, and power factor of single and polyphase alternating circuits. He will have a basic knowledge of motor and motor control systems; industrial electronic control systems; business procedures, organization, and practices; communicative skills; and the necessary background to be able to advance through experience and additional training. Following actual experience, the CVTI electrical installation and maintenance graduate will be eligible and should have the background to pass the North Carolina State Electrical License examination.

CURRICULUM BY QUARTERS

COURSE TITLE	Hours Per Week Class	Lab.	Quarter Hours Credit
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FIRST QUARTER

ELC	1112	Direct and Alternating Current	5	12	9
ENG	1101	Reading Improvement	2	0	2
MAT	1115	Electrical Math	5	0	5
PHY	1101	Applied Science	3	2	4
			15	14	20

SECOND QUARTER

ELC	1113	Alternating Current and Direct Current Machines and Controls	5	12	9
DFT	1110	Blueprint Reading: Building Trades	0	3	1
ENG	1102	Communication Skills	3	0	3
PHY	1102	Applied Science	3	2	4
			11	17	17

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
THIRD QUARTER					
ELC	1124	Residential Wiring	5	9	8
ELN	1118	Industrial Electronics	3	6	5
PSY	1101	Human Relations	3	0	3
DFT	1113	Blueprint Reading: Electrical	0	3	1
			<hr/> 11	<hr/> 18	<hr/> 17
FOURTH QUARTER					
ELC	1125	Commercial and Industrial Wiring	5	12	9
ELN	1119	Industrial Electronics	3	6	5
BUS	1103	Small Business Operations	3	0	3
			<hr/> 11	<hr/> 18	<hr/> 17

COURSE DESCRIPTIONS BEGIN PAGE 78

HOSIERY SEAMING

Only in recent years has seaming become an important occupation in the hosiery industry. As a result of increased production and lower costs, greater numbers of women are needed in this field. This course, only two weeks in length, is designed to teach the student to adjust and operate a power sewing machine to close openings in the toes of socks. Most students approach and many meet production standards within the training period. The total cost of this course is only \$7.00.

KNITTING MACHINE FIXING

North Carolina is the hosiery production capital of the world. Almost thirty-nine per cent of the Catawba County working population is employed in the hosiery-textile field and there is a distinct shortage of knitting machine fixers.

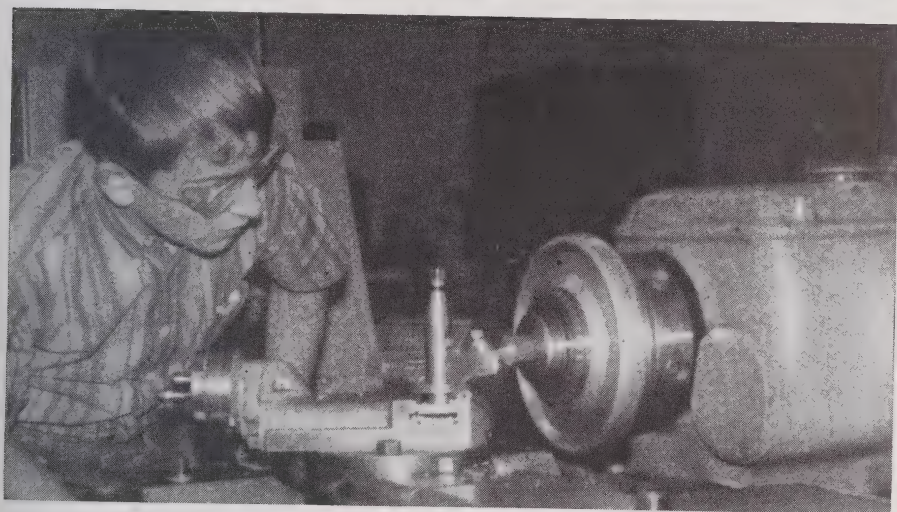
This program as offered by CVTI is two quarters in length if taken six (6) hours per day. It is designed to give the student a comprehensive knowledge of the knitter fixing trade. The student will master the basic skills of installation, maintenance, adjustment, and repair on a variety of machines. Some of the machines are Scott and Williams Komets, Bentley Komets, Scott and Williams K-N's, B-3's, H's, and B-5's.

Some of the major topics studied in the course are:

Mill Relationship	Replacement of Parts and
Mill Safety	Attachments, Purpose
Stitch Formation	Identify Parts
Machines	Driving Mechanism
Make Up	Main Drum
Top	Stripper Drum

Body
Heel
Feet
Ring Toe and Toe
Looper Line and Clip

Dismantling and Putting Together
of Machines
Trouble Shooting
Fundamentals of
Pattern Making



MACHINE SHOP

Surveys recently completed in North Carolina and locally show that many of the existing industries lack the time and facilities for training enough machinists to meet present and planned needs. Expanding industries already located in our State and new industries under development invariably express the need for skilled machinists who have the background, knowledge, and potential to advance.

This course is designed to give students the opportunity to acquire basic knowledge, skills, and related technical information necessary to gain employment in the machine shop industry. Students will develop skill in bench work, layout, drilling, lathe work, milling, shaping, planing, broaching, and grinding. Operating principles of machine tools, use of measuring and testing instruments, math and blueprint reading are also covered. Through actual shop experience, class assignments, discussion, demonstrations, and experiments, the students become industrially qualified.

The qualified graduate is a skilled metal worker who shapes metal parts by using machine tools and hand tools. His training and experience enable him to plan and carry through all the operations needed in turning out a machined product and to switch readily from one kind of product to another.

He will be able to select the proper tools and material required for each job and to plan the cutting and finishing operations in their proper order so that he can complete the finished work according to blueprint or written specifications. He makes standard shop computations relating to dimensions of work, tooling, feeds, and speeds of machining. Through the use of instruments such as micrometers and gages, he works to thousands of an inch.

CVTI graduates should be able to set up and operate most of the machines found in this area. He also must know the composition of metals so that he can heat and quench cutting tools and parts to improve machinability. Thus, his wide knowledge enables him to turn a block of metal into an intricate, precise part.

These abilities then create a demand for the individual completing the machine shop course. Graduates can not only expect above-average-wages, but also advancement opportunities to positions such as set up men, foremen, and tool and die makers.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
MEC	1101	Machine Shop Theory & Practice	3	12	7
MAT	1101	Fundamentals of Mathematics	5	0	5
DFT	1104	Blueprint Reading: Mechanical	0	3	1
ENG	1101	Reading Improvement	2	0	2
PHY	1101	Applied Science	3	2	4
			<hr/> 13	<hr/> 17	<hr/> 19
SECOND QUARTER					
MEC	1102	Machine Shop Theory & Practice	3	12	7
MAT	1103	Geometry	3	0	3
DFT	1105	Blueprint Reading: Mechanical	0	3	1
PHY	1102	Applied Science	3	2	4
ENG	1102	Communication Skills	3	0	3
			<hr/> 12	<hr/> 17	<hr/> 18
THIRD QUARTER					
MEC	1103	Machine Shop Theory & Practice	3	12	7
MEC	1115	Treatment of Ferrous Metals	2	3	3
DFT	1106	Blueprint Reading: Mechanical	0	3	1
MAT	1104	Trigonometry	3	0	3
PSY	1101	Human Relations	3	0	3
			<hr/> 11	<hr/> 18	<hr/> 17

COURSE TITLE

Hours Per Week
Class Lab.

Quarter Hours Credit

FOURTH QUARTER

MEC 1104	Machine Shop Theory & Practice	3	12	7
MEC 1116	Treatment of Non-Ferrous Metals	2	3	3
MAT 1123	Machinist Mathematics	3	0	3
BUS 1105	Industrial Organizations	3	0	3
		<hr/>	<hr/>	<hr/>
		11	15	16

COURSE DESCRIPTIONS BEGIN PAGE 78

PRACTICAL NURSING

The accelerated growth of population in North Carolina and rapid advancement in medical technology demand a tremendously increased number of well-trained, capable personnel for health service positions. CVTI, in conjunction with Catawba Hospital, Newton, offers the LPN program to meet local needs for such personnel. Classes will be held at the Institute while actual experience will be obtained at the hospital. The graduate is eligible to take and must pass the N. C. Board of Nursing LPN examination to obtain her license.

The LPN is qualified and prepared to function in a variety of situations: hospitals of all types, nursing homes, clinics, doctors' and dentists' offices and, in some localities, public health facilities. In all situations, the LPN functions under the supervision of a registered nurse and/or licensed physician.

Job requirements for the Licensed Practical Nurse include suitable personal characteristics, ability to adapt knowledge and understandings of nursing principles to a variety of situations, technical skills for performance of bedside nursing, appreciation for differences of people and for the worth of every individual, a desire to serve and help others, and readiness to conform to the requirements of nursing ethics and hospital policies.

CURRICULUM BY QUARTERS**COURSE TITLE**

Hours Per Week
Class* Lab.*

Quarter Contact Hours

FIRST QUARTER

NUR 1001	Practical Nursing I	28	2	330
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SECOND QUARTER

NUR 1002	Practical Nursing II	12	24	396
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THIRD QUARTER

NUR 1003	Practical Nursing III	12	24	396
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FOURTH QUARTER

NUR 1004	Practical Nursing IV	12	24	396
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<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL				1518

*Figures given are averages, as there will be some variation from week to week.

COURSE DESCRIPTIONS BEGIN PAGE 78

RADIO AND TELEVISION SERVICING

Within recent years improved electronics techniques have provided expanded entertainment and educational facilities in the form of monochrome and color television, frequency modulated radio, high fidelity amplifiers and stereophonic sound equipment. These developments require expanded knowledge and skill of the individual who would qualify as a competent and up-to-date serviceman.

Employment of television and radio service technicians is expected to increase rapidly during the 1965-75 decade. This course provides a training program which will provide the basic knowledge and skills involved in the installation, maintenance, and servicing of radio, television and sound amplifier systems. A large portion of time is spent in the laboratory verifying electronic principles and developing service techniques.

A radio and television graduate may be required to install, maintain, and service amplitude modulated and frequency modulated home and auto radios, transistorized radios, monochrome and color television sets, intercommunication, public address and paging systems, high fidelity and stereophonic amplifiers, record players and tape recorders.

His work will require meeting the public both in the repair shop and on service calls. A serviceman who establishes his own business will also need to know how to maintain business records and inventory.

CURRICULUM BY QUARTERS

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
MAT	1115	Electrical Mathematics	5	0	5
ENG	1101	Reading Improvement	2	0	2
ELC	1112	Direct & Alternating Current	5	15	10
			12	15	17
SECOND QUARTER					
MAT	1116	Electrical Mathematics	5	0	5
ENG	1102	Communication Skills	3	0	3
ELN	1122	Vacuum Tubes & Circuits	5	9	8
ELN	1123	Amplifier Systems	2	6	4
			15	15	20
THIRD QUARTER					
ELN	1125	Radio Receiver Servicing	2	6	4
ELN	1126	Transistor Theory & Circuits	4	15	9
PSY	1101	Human Relations	3	0	3
			9	21	16

FOURTH QUARTER OR OPTION

ELN	1127	Television Receiver Circuits and Servicing	10	15	15
BUS	1103	Small Business Operations	3	0	3
			<hr/> 13	<hr/> 15	<hr/> 18

FOURTH QUARTER OPTION

ELN	1128	Television Receiver Circuits and Servicing	5	12	9
		Elective (1)	3	6	6
BUS	1103	Small Business Operations	3	0	3
			<hr/> 11	<hr/> 18	<hr/> 18

COURSE DESCRIPTIONS BEGIN PAGE 78

UPHOLSTERING

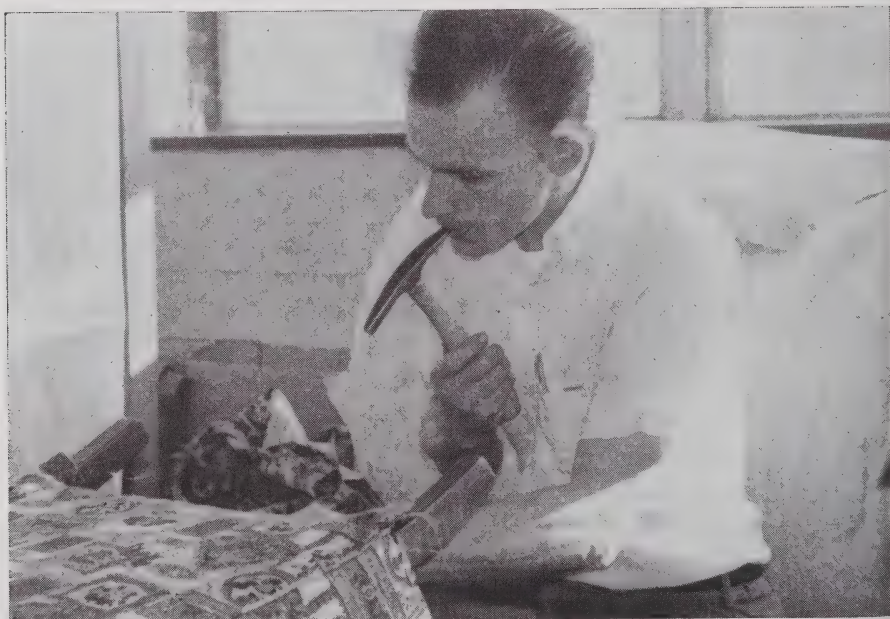
Upholstering is among the most skilled and among the better paying occupations in the furniture industry. This course covers various styles and types of furniture. The primary emphasis is upon actual practical experience in the construction, springing up, covering, and trimming of upholstered chairs and sofas. Emphasis throughout is placed upon quality and the development of production speed.

Full-time students may complete the upholstering course in 1½ quarters and part-time students in 3 quarters.

The student will learn and/or develop skill in the following areas:

- I. History and styling of furniture
- II. Tools and equipment
- III. Spitting tacks—hammer technique
- IV. Stapling—staple gun techniques
- V. Springing up
- VI. Arranging and securing filler and padding
 - A. Sewing large stitches across surface of fabric; covering of springs and working filler under stitches to form holding base
 - B. Spreading more filler over surface and placing cover filler, sewing it to bottom fabric
 - C. Placing additional filler on top of cover and covering padded sections with unbleached muslin, tacking muslin to frame
 - D. Arranging layer of cotton wadding over muslin cover for smoother finish
- VII. Covers
- VIII. Covering padded frame with upholstery fabric
 - A. Selecting previously cut fabric, partially stitched, and aligning and smoothing it in place over cotton wadding
 - B. Tacking cover to form in key spots to hold it temporarily

- C. Sewing sections of cover which have been left unstitched with invisible lockstitches
 - D. Strengthening and tacking edges of cover tightly and evenly to frame
 - E. Untacking covering in places and inserting regulator to smooth out lumpy padding, then permanently tacking
 - F. Trimming covering around legs and uprights to make a neat fit
- IX. Making and typing buttons
- X. Tufting and buttoning



UPHOLSTERY CUTTING AND SEWING

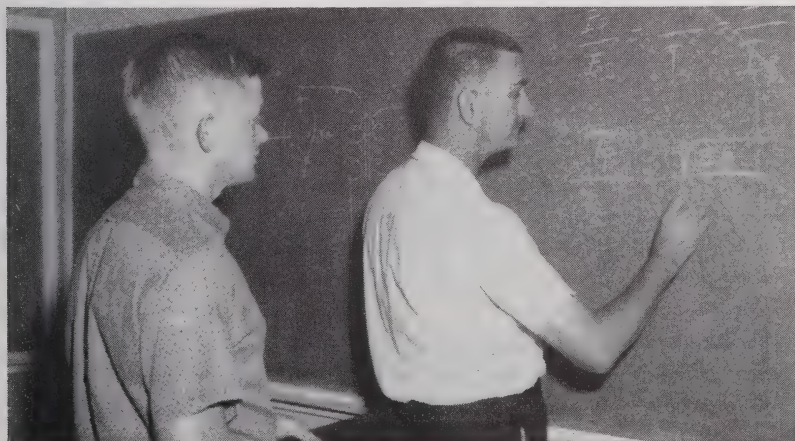
Furniture manufacturing, one of the two largest industries in this area, affords women excellent employment opportunities, especially as upholstery cutters and sewing machine operators. Many men also find this course a valuable asset in operating their own businesses or seeking advancement to supervisory positions.

In this program, the student learns to develop patterns, cut upholstery material, as well as to adjust and operate the sewing machine to sew the material for proper fitting and matching of fabrics. Not only are fundamental sewing operations learned, but quality and production speed emphasized.

The course may be completed in one quarter on a full-time basis or two quarters part-time.

The student will learn:

- I. Basic cutting techniques
 - A. How to measure a frame
 - B. How to develop a pattern
 - C. How to match and mark fabrics
 - D. How to properly use tools to cut the material
- II. Basic knowledge of the sewing machine
 - A. How to thread a machine
 - B. How to and when to change stitches
 - C. How to change needles
 - D. How and when to adjust tension
- III. Understanding pieces to be sewn
 - A. Understanding cutter's marks
 - B. Where and why to sew pulls
 - C. Where and why to sew welts
 - D. How to sew welts
 - E. How to French seam (top stitch)
 - F. How to match stripes
- IV. Sewing the loose cushion
 - A. Learning the importance of exact seaming
 - B. How to apply boxing to face of cushion to sew
 - C. How to join boxing
 - D. How to match stripes on boxing and face
 - E. How to finish cushion
- V. Sewing skirts—Flounces
 - A. Learning to sew box-pleat skirt
 - B. Learning to line box-pleat skirt
 - C. Learning to sew flounces



VOCATIONAL-TRADE COURSE DESCRIPTIONS

AUTOMOTIVE-DIESEL

	Class	Lab.	Credit
PME 1101 Internal Combustion Engine	3	12	7
Development of a thorough knowledge and ability in using, maintaining, and storing the various hand tools and measuring devices needed in engine repair work. Study of the construction and operation of components of internal combustion engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing. Prerequisite: None.			
PME 1102 Engine Electrical and Fuel Systems	5	12	9
A thorough study of the electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment of the fuel and electrical system. Prerequisite: None.			
PME 1103 Diesel Engine Servicing	3	9	6
A study and practice in the servicing and repair of diesel engines and components. A study of fuels and special handling precautions, diesel fuel systems; injectors, pumps and controls. An advanced study of diesel engine principles, design, construction, re-boring and installing of cylinder sleeves, and the operation of auxiliary engine controls. Prerequisite: PME 1102.			
AUT 1121 Braking Systems	3	3	4
A complete study of various braking systems employed on automobiles and light weight trucks. Emphasis is placed on how they operate, proper adjustment, and repair. Prerequisite: PHY 1102.			
AUT 1123 Automotive Chassis and Suspension Systems	3	9	6
Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of suspension, and steering systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, and front end and alignment. Prerequisite: None.			
AUT 1124 Automotive Power Train Systems	3	9	6
Principles and functions of automotive power train systems: clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair. Prerequisites: PHY 1101, PHY 1102.			
AUT 1125 Automotive Servicing	3	9	6
Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Troubleshooting of automotive systems, providing a full range of experiences in testing, adjusting, repairing and replacing. Prerequisites: AUT 1123, AUT 1121, AHR 1101, PME 1101, PME 1102.			
PME 1144 Power Trains	3	9	6
A study is made of types of gears, gear reduction ratios, gear combinations, bearings, types of clutches, drive lines, universals, and hydraulics as applied to power transmissions. Laboratory instruction is offered in the repair and servicing of clutches, fluid couplings and torque converters, standard power overdrive, multiple and automatic			

transmissions, drive lines and universal joints, and single speed and multi-speed final drive assemblies. Prerequisite: PME 1102. Corequisite: PME 1145.

	Class	Lab.	Credit
PME 1145 Chassis and Suspension Systems	3	9	6

The principles involved in frame design, types of suspension, load weight distribution, types of steering, wheel alignment, and wheel balance are studied. The laboratory offers instruction in disassembly, inspection, reassembly, and adjustment of the components of frame and suspension systems. Prerequisite: None.

AIR CONDITIONING

AHR 1101 Automotive Air Conditioning	2	3	3
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General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system. Prerequisites: PHY 1101, PHY 1102.

BUSINESS

BUS 1103 Small Business Operations	3	0	3
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An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations. Prerequisite: None.

BUS 1105 Industrial Organizations	3	0	3
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Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost. Prerequisite: None.

DRAFTING

DFT 1101 Schematics & Diagrams: Power Mechanics	0	3	1
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Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, views, dimensioning procedures, and notes. Prerequisite: None.

DFT 1104 Blueprint Reading: Mechanical	0	3	1
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Interpretation and reading of blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes. Prerequisite: None.

DFT 1105 Blueprint Reading: Mechanical	0	3	1
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Further practice in interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: DFT 1104.

DFT 1106 Blueprint Reading: Mechanical	0	3	1
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Advanced blueprint reading and sketching as related to detail and assembly drawings used in machine shops. The interpretation of drawings of complex parts and mechanisms for features of fabrication, construction and assembly. Prerequisite: DFT 1105.

	Class	Lab.	Credit
DFT 1110 Blueprint Reading: Building Trades	0	3	1

Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches. Prerequisite: None.

DFT 1113 Blueprint Reading: Electrical	0	3	1
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Interpretation of schematics, diagrams and blueprints applicable to electrical installations with emphasis on electrical plans for domestic and commercial buildings. Sketching schematics, diagrams, and electrical plans for electrical installations using appropriate symbols and notes according to the applicable codes will be a part of this course. Prerequisite: DFT 1110.

ELECTRICAL—RADIO—TELEVISION

ELC 1112 Direct and Alternating Current	5	12	9
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A study of the electrical structure of matter and electron theory, the relationship between voltage, current, and resistance in series, parallel, and series-parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchhoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits. Prerequisite: None.

ELC 1113 Alternating Current and Direct Current Machines and Controls	5	12	9
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Provides fundamental concepts in single and polyphase alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the use of electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type control used in small appliances such as: thermostats, timers, or sequencing switches. Prerequisites: ELC 1112, MAT 1115.

ELN 1118 Industrial Electronics	3	6	5
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Basic theory, operating characteristics, and application of vacuum tubes such as: diodes, triodes, tetrodes, pentodes, and gaseous control tubes. An introduction to amplifiers using triodes, power supplies using diodes, and other basic applications. Prerequisite: ELC 1113.

ELN 1119 Industrial Electronics	3	6	5
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Basic industrial electronic systems such as: motor controls, alarm systems, heating systems and controls, magnetic amplifier controls, welding control systems using thyatron tubes, and other basic types of systems commonly found in most industries. Prerequisite: ELN 1118.

ELN 1122 Vacuum Tubes and Circuits	5	9	8
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An introduction to vacuum tubes and their development; the theory, characteristics and operation of vacuum diodes, semi-conductor diodes, rectifier circuits, filter circuits, triodes and simple voltage amplifier circuits. Prerequisites: ELC 1112, MAT 1115.

ELN 1123 Amplifier Systems	2	6	4
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An introduction of commonly used servicing techniques as applied to monophonic and stereophonic high fidelity amplifier systems and auxiliary equipment. The operation and servicing of inter-communication amplifiers and switching circuits will also be taught. Prerequisites: MAT 1115, ELC 1112.

ELC 1124 Residential Wiring	Class 5	Lab. 9	Credit 8
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Provides instruction and application in the fundamentals of blueprint reading, planning, layout, and installation of wiring in residential applications such as: services, switch-boards, lighting, fusing, wire sizes, branch circuits, conduits, National Electrical Code regulations in actual building mock-ups. Prerequisites: ELC 1113, DFT 1110.

ELC 1125 Commercial and Industrial Wiring	5	12	9
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Layout, planning, and installation of wiring systems in commercial and industrial complexes, with emphasis upon blueprint reading and symbols, the related National Electrical Codes, and the application of the fundamentals to practical experience in wiring, conduit preparation, and installation of simple systems. Prerequisites: ELN 1118, ELC 1124.

ELN 1125 Radio Receiver Servicing	2	6	4
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Principles of radio reception and practices of servicing; included are block diagrams of radio receivers, servicing techniques of AM and FM receivers by resistance measurements, signal injection, voltage analysis, oscilloscope methods of locating faulty stages and components and the alignment of AM and FM receivers. Prerequisites: ELN 1123, ELN 1122.

ELN 1126 Transistor Theory and Circuits	4	15	9
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Transistor theory, operation, characteristics and their application to audio and radio frequency amplifier and oscillator circuits. Prerequisite: ELN 1123.

ELN 1127 Television Receiver Circuits and Servicing	10	15	15
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A study of principles of television receivers, alignment of radio and intermediate frequency amplifiers, adjustment of horizontal and vertical sweep circuits will be taught. Techniques of troubleshooting and repair of TV receivers with the proper use of associated test equipment will be stressed. Additional study of more specialized servicing techniques and oscilloscope waveform analysis will be used in the adjustment, troubleshooting and repair of the color television circuits. Prerequisites: ELN 1126, ELN 1125.

ELN 1128 Television Receiver Circuits and Servicing	5	12	9
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This course, taught in conjunction with an elective, will be a shortened version of ELN 1127. Prerequisites: ELN 1126, ELN 1125.

ELN 1129 Single Side-band Systems	3	6	6
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An introductory course of single side-band transmission system with carrier frequency or without and the associated balanced modulator of phasing system used to produce this type of transmission. Time will be allotted also to the necessary circuitry in the receiver to receive this type transmission. Prerequisites: ELN 1126, ELN 1125.

ELN 1130 Two-way Mobile Maintenance	3	6	6
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A course to acquaint the student with the theory and maintenance of fixed station and mobile station transmitters and receivers. Except for radio laws, sufficient information will be given to qualify the student to take the FCC second class radiotelephone license examination. Prerequisites: ELN 1126, ELN 1125.

ENGLISH

ENG 1101 Reading Improvement	2	0	2
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Designed to improve the student's ability to read rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye

coordination and word group recognition and to train for comprehension in larger units. Prerequisite: None.

	Class	Lab.	Credit
ENG 1102 Communication Skills	3	0	3

Designed to promote effective communication through correct language usage in speaking and writing. Prerequisite: None.

MACHINE SHOP

MEC 1101 Machine Shop Theory & Practice	3	12	7
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An introduction to the machinist trade and the potential it holds for craftsmen. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice. Prerequisite: None.

MEC 1102 Machine Shop Theory & Practice	3	12	7
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Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course. Prerequisite: MEC 1101.

MEC 1103 Machine Shop Theory & Practice	3	12	7
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Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculating, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder. Prerequisite: MEC 1102.

MEC 1104 Machine Shop Theory & Practice	3	12	7
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Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry. Prerequisite: MEC 1103.

MEC 1115 Treatment of Ferrous Metals	2	3	3
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Investigates the properties of ferrous metals and tests to determine their uses. Instructions will include some chemical metallurgy to provide a background for the understanding of the physical changes and causes of these changes in metals. Physical metallurgy of ferrous metals, producing iron and steel, theory of alloys, shaping and forming, heat treatment for steel, surface treatments, alloy of special steel, classification of steels, and cast iron will be topics for study. Prerequisite: None.

MEC 1116 Treatment of Non-Ferrous Metals	2	3	3
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Continuation of the study of physical metallurgy. The non-ferrous metals: bearing metals (brass, bronze, lead), light metals (aluminum and magnesium), and copper and its alloys are studied. Powder metallurgy, titanium, zirconium, indium and vanadium are included in this course. Prerequisite: MEC 1115.

MATHEMATICS

	Class	Lab.	Credit
MAT 1101 Fundamentals of Mathematics	5	0	5
Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth. Prerequisite: None.			
MAT 1103 Geometry	3	0	3
Fundamental properties and definitions; plane and solid geometric figures, selected general theorems, geometric construction of lines, angles and plane figures. Dihedral angles, areas of plane figures, volumes of solids. Geometric principles are applied to shop operations. Prerequisite: None.			
MAT 1104 Trigonometry	3	0	3
Trigonometric ratios; solving problems with right triangles, using tables, and interpolating; solution of oblique triangles using law of sines and law of cosines; graphs of the trigonometric functions; inverse functions, trigonometric equations. All topics are applied to practical problems. Prerequisite: MAT 1103.			
MAT 1115 Electrical Math	5	0	5
A study of fundamental concepts of algebra; basic operations of addition, subtraction, multiplication, and division; solution of first order equations, use of letters and signs, grouping, factoring, exponents, ratios, and proportions; solution of equations, algebraically and graphically; a study of logarithms and use of tables; and introduction to trigonometric functions and their application to right angles; and a study of vectors for use in alternating current. Prerequisite: None.			
MAT 1116 Electrical Mathematics	5	0	5
A working knowledge of the powers of 10, Ohm's Law for series and parallel circuits, quadratic equations, Kirchhoff's Laws, trigonometric functions, plane vectors, alternating currents, vector algebra and logarithms. Prerequisite: MAT 1115.			
MAT 1123 Machinist Mathematics	3	0	3
Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems. Prerequisite: MAT 1104.			

NURSING

NUR 1001 Practical Nursing I	28	2
Designed to assist students in acquiring the knowledge, understandings, appreciations, and attitudes basic to effective nursing of patients of all ages and backgrounds. Emphasis is on nursing needs arising both from the individuality of the patient and from inability for self-care as a result of a health deviation. Patient-centered studies include analysis of patient needs, both through classroom study of hypothetical patient situations and through planned experiences in the clinical environment. Beginning skills in nursing methods are developed through planned laboratory practice and supervised patient care. Increased emphasis on clinical activities and selected patient care.		
OBJECTIVES: To assist beginning students in practical nursing to acquire basic knowledge from nursing and related subject areas and to begin to develop the skills needed for safe and effective bedside care of patients in a state of dependency due to health deviations.		

	Class	Lab.	Credit
COURSE MATERIAL: Nursing—History			
Introduction to Patient Care			
Health—Personal, Physical and Mental			
Family			
Community			
Basic Science—Body Structure and Function			
Bacteriology			
Basic Nutrition			
Vocational Adjustments—Introduction to Ethics			
Legal Aspects of Nursing			
Communications and Human Relations			

Prerequisite: None.

NUR 1002 Practical Nursing II **12** **24**

Designed to introduce the student to deviations from normal, to nursing methods and therapeutic procedures, and to the clinical specialties. Continued patient-centered study, with introduction of the illness condition as an additional source of nursing needs. Increased emphasis on clinical activities and selected patient care.

OBJECTIVES: To assist practical nursing students to acquire further knowledge and understanding and to develop further skills needed for rendering safe and effective nursing care to selected patients of all ages.

COURSE MATERIAL: Medical-Surgical Nursing—Patient Care	
Therapeutic Methods, including administration of oral medications	
Introduction to Maternity Nursing	
Introduction to Nursing and Sick Child	
Communications and Human Relations	

Prerequisite: NUR 1001.

NUR 1003 Practical Nursing III **12** **24**

Designed to acquaint the student with common illness conditions, related nursing needs and therapeutic methods, and role of the practical nurse in care of patients with specific conditions. Learning situations are selected to illustrate commonalities with a wide variety of similar conditions and to promote student awareness of similarities and differences. Clinical practice emphasizes student experience in care of subacutely ill patients with a wide variety of illnesses, correlated with classroom studies insofar as possible.

OBJECTIVES: To assist practical nursing students to acquire knowledge of common disease conditions and to develop beginning skills in rendering nursing care to patients of all ages with specific needs arising from the illness and/or therapy.

COURSE MATERIAL: Common Medical-Surgical Conditions	
Care of the Subacutely Ill Child	
Care of Maternity Patients and Newborn Infants with Complications	

Prerequisite: NUR 1002.

NUR 1004 Practical Nursing IV

Class	Lab.	Credit
12	24	

Designed to introduce the student to care of patients with complex nursing needs and to the assisting role of the practical nurse in situations requiring judgments based on depth of knowledge. Clinical practice includes supervised care of labor patients and seriously ill adults and children.

OBJECTIVES: To assist advanced practical nursing students to acquire knowledge of needs of seriously ill patients, to develop beginning skills in assisting the registered nurse and/or physician in complex nursing situations, and to make the transition to the role of graduate practical nurse.

COURSE MATERIAL: Needs of the Seriously Ill Patient

Needs of Patients in Immediate Post-Operative Period

Needs of the Labor Patient

Needs of the Seriously Ill Child

Assuming the Role of Graduate Practical Nurse

Prerequisite: NUR 1003

PSYCHOLOGY

PSY 1101 Human Relations

3	0	3
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A study of basic principles of human behavior. The problems of the individual are studied in relation to society, group membership, and relationships within the work situation. Prerequisite: None.

RADIO-TELEVISION

For Radio-Television course descriptions see ELECTRICAL-RADIO-TELEVISION, Page 80.

SCIENCE

PHY 1101 Applied Science

3	2	4
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An introduction to physical principles and their application in industry. Topics in this course include measurement; properties of solids, liquids, and gases; basic electrical principles. Prerequisite: None.

PHY 1102 Applied Science

3	2	4
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The second in a series of two courses of applied physical principles. Topics introduced in this course are heat and thermometry, and principles of force, motion, work, energy, and power. Prerequisite: None.

EVENING PROGRAMS

Evening courses are offered which are part-time courses. These subjects do not count toward diplomas or degrees, but certificates of completion are given to the completing students. Evening extension courses may be academic, technical, vocational, or general self-improvement. Class sessions are usually held one or more evenings per week, Monday through Thursday.

ADMISSION REQUIREMENTS. Vocational-technical evening courses are designed to serve adults who are employed or are seeking employment at the skilled, technical, and sub-professional levels. Any adult 18 years or older who needs training or re-training, or who otherwise profits from the proposed courses may be enrolled. Enrollees who are employed normally attend training during their non-working hours to increase their skills and understandings and to improve their competency and to qualify for advancement.

CERTIFICATES. Students successfully completing evening extension courses will be awarded certificates by CVTI.

TYPE COURSES. Short term courses will cover the following categories: Technical-Vocational Courses; Occupational Upgrading; Supervisory Development Training; Food and Health Service Programs; High School Diploma Programs; Cultural and Family Living Programs; and Fire Service Training Program.

FACULTY. The vocational-technical evening class instructor is drawn from local industry and business. He is well qualified as to acquired knowledge, skill and ability through training and practical experience relative to the subject taught.

FEES. No tuition or registration fees are charged for non-credit courses. Students, however, are expected to purchase required books and/or materials and supplies where needed.

EXTENSION PROGRAM

The function of the extension program is to offer industry and other interested groups and/or individuals an opportunity to obtain classes held on premises away from the Institute.

Classes may be in the immediate area in which the industry is engaged. The purpose of the course may be that of pre-employment training; on-the-job training; or the upgrading of the skills of present employees.

In addition, special classes may be developed for specific job training of personnel for a NEW INDUSTRY coming into the area.

Extension classes are scheduled at the time and place convenient to the interested group or individual initiating the class inquiry.

There is no charge for such courses and the cost of the instructor's salary will be borne by Catawba Valley Technical Institute. The potential class, however, must have a minimum of ten students.

For assistance in developing extension classes, inquiries and requests are welcomed by the Director of Extension Services.

ADULT EDUCATION PROGRAM

OBJECTIVES: The General Adult Education Program is a distinct part of the total educational program of CVTI. Emphasis is placed upon aesthetic and social skills, citizenship, general knowledge, and the solution of community and individual problems. Adult Education also makes provision for the education and re-education of the population in the area served by the school.

The objectives of the General Adult Education program are to make available to the community courses in general education on both an elementary level (grades 1 through 8) and a high school level (grades 9 through 12). Also, a large number of Adult Culture courses are offered at CVTI and in the Catawba Valley area on the post-high school and college level. The program is designed to provide vocational opportunities and to assist the individual in the preparation for a participating responsibility in a free, democratic society.

All adult courses are offered in accordance with the Department of Community Colleges recommendations. The best qualified instructors to be found in the Catawba Valley area are utilized. All teachers are certified to teach on either the Elementary, High School, or General Adult and Culture level. Suggestions as to courses desired are welcomed by the Institute.

BASIC ADULT. On the elementary level, CVTI offers adult courses to any citizen who is over 18 years of age. Courses include Reading, Writing, Spelling, Arithmetic, Social Studies, Health, Listening and Talking, Communicative Skills, and Homemaker Education. Courses are generally offered twice a week two hours per session. Classes meet in Catawba, Iredell, and Alexander counties and students may enroll in classes nearest their home. These classes are free, and books are furnished by CVTI.

HIGH SCHOOL. High School classes in English, Mathematics, Science, Social Studies, and Reading Improvement are offered twice a week at Catawba Valley Technical Institute, as well as in Iredell and Alexander counties. Any adult, 21 years of age or older, is eligible to enroll in the High

School review program leading to the N. C. State Equivalency Certificate or the Adult High School Diploma.

The Catawba County Board of Education, the Alexander County Board of Education, and the Statesville City Board of Education are cooperating with CVTI in the earned Adult High School Diploma program and all High School Diplomas are issued by one of the cooperating boards of education.

Adults seeking their Adult High School Diploma are required to take standardized achievement tests in English, Math, Social Studies, and Science. Tests are given at the beginning and end of courses in each of these subjects. Students making satisfactory scores on the beginning-of-the-course tests will not be required to complete classes. If all four tests are passed, the candidate will be recommended to the cooperative Board of Education to receive the Diploma.

Candidates who fail to make satisfactory scores on either test must satisfactorily complete the course in that subject area. At the end of the course the student may again take the test. When, in this manner, the adult student makes a satisfactory score in the four areas of study, he is recommended for the Adult High School Diploma.

No adult may enroll for more than two high school courses during an eleven-week quarter. Each class meets twice weekly and two hours per meeting.

Candidates for the Adult High School Diploma are charged a testing fee of \$2.00 and must purchase books for any courses taken. No other fees or charges are made.

Beginning-of-the-course tests are administered at Catawba Valley Technical Institute on announced dates. Testing fees are payable in advance at the Institute.

GENERAL ADULT COURSES. To complete the total education program of CVTI, numerous general adult courses are offered. Non-credit classes are available in conversational foreign languages, public speaking, economics, sociology, civics, civil defense, current affairs, government, problems of democracy, history, education for parenthood, home economics, leadership training, and consumer education.

To fulfill the need for avocational courses, Catawba Valley Technical Institute offers classes in Creative Writing, Writing for Publication, Art, Ceramics, Leathercraft, Lapidary Art, Ham Radio Techniques, Photography, and Welding.

The majority of adult courses are evening classes. An occasional class, however, is held in the morning or afternoon for the convenience of an interested group of adults.

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CATAWBA VALLEY TECHNICAL INSTITUTE
HICKORY NORTH CAROLINA

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CVT:





1968-69 1969-70 CATALOG

VOLUME VII, NUMBER 1

CVTi

ATAWBA VALLEY TECHNICAL INSTITUTE
WICKORY, NORTH CAROLINA





THE OPEN DOOR . . .

**Here is the hope,
the bettering of your future;
come and achieve;
we stand ready for your challenge.**

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GENERAL INFORMATION

PURPOSES

Catawba Valley Technical Institute was established to serve the people and industry of this area by providing a comprehensive post-high school educational program. Available are programs in technical, business, vocational-trade, adult education, upgrading, cultural and avocational courses. In addition, guidance services are available for both in-school and out-of-school citizens.

The Institute seeks to develop the skills, knowledge, abilities, and attitudes of each student for entry and progress within an occupational field. For employed persons courses are designed to upgrade and increase their present skills and knowledge.

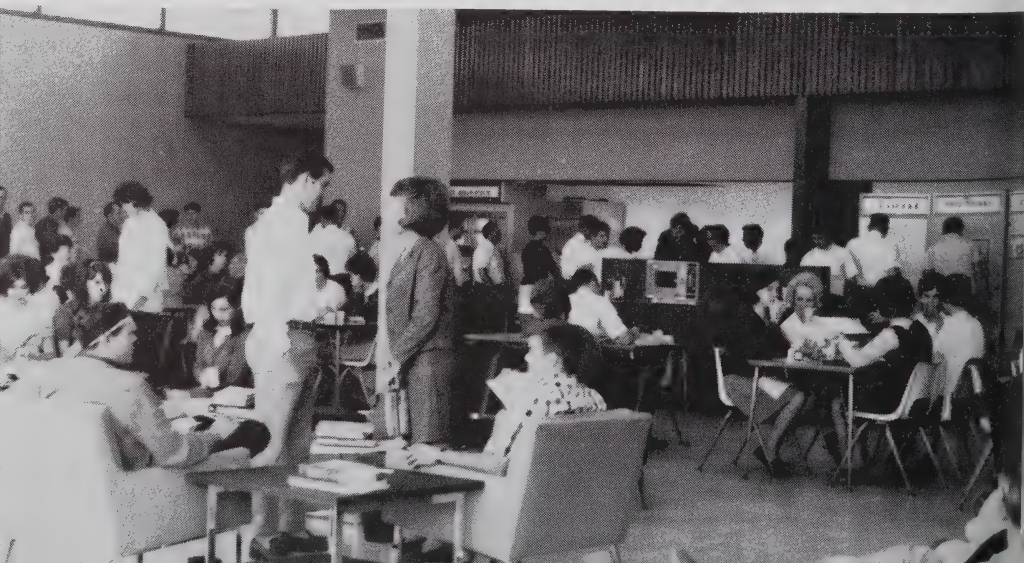
In addition, CVTI provides an opportunity for all adults to further their basic elementary and high school education, to create and develop cultural and avocational interests and to acquire knowledge and habits required for more effective citizenship and family living.

HISTORY

Catawba Valley Technical Institute, the ninth Industrial Education Center in North Carolina, is a state-county supported co-educational institution. It has served as a model for other Institutes throughout North Carolina and the surrounding states.

Ground was broken for CVTI in the fall of 1959 and construction was completed on the 40,000 square foot building in August, 1960. The ultra-modern building, one of the most efficient and complete in the state, represents an initial investment of approximately \$500,000.

Under the direction of President Robert Paap, the new building was placed in operation in September, 1960. From an initial enrollment of





seventy-five (75) students during the first quarter, the enrollment has soared to some 650 full-time students in curriculum programs and approximately 2000 students each quarter in part-time extension and adult programs.

The Institute, which began operation in 1960 as the Catawba County Industrial Education Center, was elevated to the present status of technical institute by the State Board of Education in January, 1964. Following the transition from an industrial education center to a technical institute, the philosophy of the Institute also experienced an important and rapid transition encompassing the open door policy and emphasis upon a quality, comprehensive educational program for every citizen of the area. It was during this transition that the Institute experienced great strides in: the development of programs for industry preparation; student enrollment; and general acceptance of the Institute by the Catawba Valley Area. In August, 1964, the new Institute, CVTI, offered its first Associate Degree in Applied Science (A.A. Sc.).

In February, 1966, construction began on a 25,000 square foot building expansion which was completed May, 1967. This expansion provided additional classrooms, a modern, spacious drafting complex, a more spacious library, a modern and spacious health services area, and a student center for the convenience of the student body and faculty.

At the present time, plans are being developed and initial steps have been taken to create additional physical facilities to include a furniture technology laboratory, a new business administration-data processing area, another physics laboratory, and additional classrooms.

LOCATION

Catawba Valley Tech, located about half-way between Hickory and Newton on Highways 64-70-321, is in Catawba County, North Carolina.

Situated in the heart of the Piedmont some 1,500 feet above sea level, CVTI is easily accessible over Interstate 40, Highways 321, 64, 70, and 127. It is within seven miles of a major airport and approximately 50 miles from metropolitan Charlotte and the famous Blue Ridge Mountains.

CAMPUS AND FACILITIES

The Catawba Valley Technical Institute campus covers forty acres fronting Highways 64-70-321, four miles east of Hickory. The present campus includes three permanent buildings and eight temporary structures for a total of more than 80,000 square feet of floor space. To meet the growing enrollments and to provide facilities for additional programs that will benefit the area, additional facilities are being planned.

The Catawba Valley Technical Institute consists of modern brick structures, most of which are air-conditioned. Contained is a 14,000 volume library for the use of both the students and public; a student center and food service area for leisure relaxation and entertainment; numerous classrooms and laboratories all of which are equipped with modern, up-to-date furniture and equipment.



CVTI maintains facilities to park 700 student vehicles, plus visitor parking accommodations. Parking facilities are located at three distinct areas to distribute student vehicles and thus minimize parking problems.

Additional facilities consist of a sheltered picnic area, basketball, volleyball, and badminton courts.

ACCREDITATION

CVTI is a member of the Department of Community Colleges of North Carolina. All programs offered by the Institute have been officially approved by the North Carolina State Board of Education; by the Veterans Administration; as well as by the North Carolina Department of Vocational Rehabilitation. The Practical Nursing Program is fully approved by the North Carolina Board of Nursing.

In seeking accreditation by a regional agency, Catawba Valley Technical Institute has taken initial steps and is a corresponding institution with the Southern Association of Colleges and Secondary Schools.

ADMISSIONS

GENERAL

In keeping with the philosophy of Catawba Valley Technical Institute and the Department of Community Colleges, current admissions procedures reflect the "Open Door" policy. Unlike most colleges, the Institute does not impose restrictive standards for admittance.

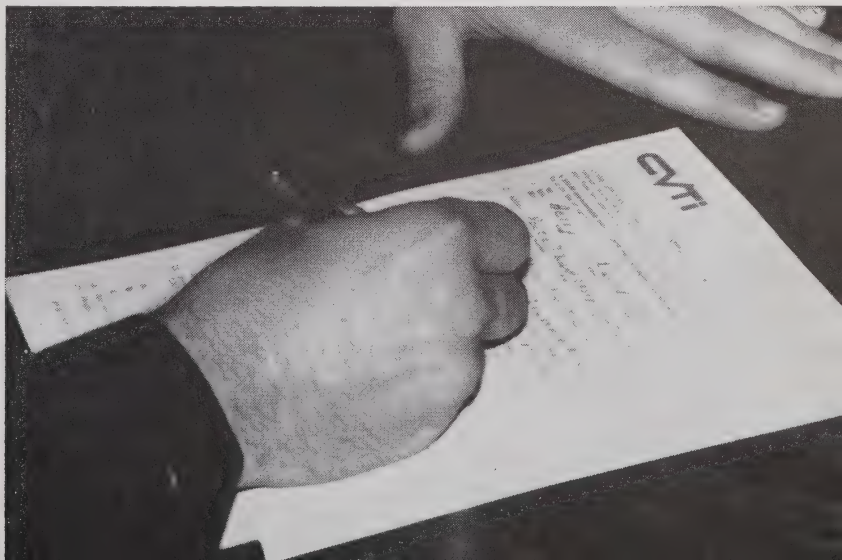
Admission to CVTI as a school is open to practically all individuals 18 years of age or older. With a series of programs covering basic adult education (grades 1 through 8), high school subjects leading to a high school diploma, pre-curriculum preparatory courses, as well as technical, business, and trade training, CVTI will admit all applicants to the school.

An applicant, however, may not necessarily be immediately admitted to the program of his or her choice. Selected requirements must be met prior to admission to a specific curriculum. Deficiencies can and must be made up prior to beginning the selected course of study. Deficiencies can be completed in courses available at CVTI. Thus, to some extent, quality can be retained in individual curricula and each applicant can be placed within a program in which he is capable of making satisfactory progress.

Before a student registers for a specific curriculum program, aptitude and placement tests are administered and counseling may be arranged. Thus an evaluation is made of the applicant's potential for success in the program of his choice.

NOTIFICATION OF ACCEPTANCE

Qualified applicants for each program will be accepted as admissions procedures are completed (on a first-come, first-served basis). Prospective students will be notified by letter of their acceptance immediately after all required information is received.



SPECIFIC PROCEDURES

ALL CURRICULUM PROGRAMS. Each applicant is responsible for fulfilling the following steps to admission in a pre-employment agricultural, business or engineering technology as well as a vocational trade program:

1. **APPLICATION.** Complete and submit with a \$10.00 deposit the standard application form (available from high school counselors or CVTI). The deposit is not refundable but will be applied to tuition fees the first quarter the applicant is enrolled, if within one year from the date the deposit is received.
2. **TESTS.** Complete the General Aptitude Test Battery administered by all North Carolina Employment Security Commission offices. Have the scores forwarded to Catawba Valley Technical Institute. (A battery of tests administered by the Institute may be substituted for the GATB.)
3. **TRANSCRIPTS.** Submit transcripts of high school and post-high school education to the Institute.
4. **INTERVIEW.** Schedule, where deemed necessary, a personal interview with a member of Student Personnel Services staff.
5. **HEALTH REPORT.** Although information regarding the applicant's physical and mental health is provided on the application form, a medical examination may be required at the discretion of the Administration.

Upon receipt of the above information, data is thoroughly reviewed. If success appears possible and probable based upon (1) minimum aptitude test scores, (2) sufficient and compatible educational requirements, and (3) related personal information, the applicant is admitted to a selected course of study.

AGRICULTURAL TECHNOLOGY DIVISION. Dequirements for admission to the agricultural programs include the steps listed under **SPECIFIC PROCEDURES**. If not a high school graduate, the candidate must possess a high school equivalency diploma (available at CVTI). High school courses in agriculture or related science are valuable to students in this division but are not required for admission.

ENGINEERING TECHNOLOGY DIVISION. Requirements for admission to a regular two-year engineering technology program include the specific procedures listed above. In addition, preference is given the applicant who:

1. Is a high school graduate. (This requirement may be met by satisfactorily obtaining a North Carolina High School Equivalency Certificate or by completing the Adult High School Program available at CVTI.)

2. Has High School credit or the equivalent for two units of mathematics, one of which is algebra.
3. Has one unit or the equivalent of science other than biology.

BUSINESS EDUCATION DIVISION. Requirements for admission to the business programs include the five steps listed under **SPECIFIC PROCEDURES** above. The applicant must also be a high school graduate. If not, the candidate must pass the North Carolina High School Equivalency Test or complete an Adult High School Program (available at CVTI).

DATA PROCESSING applicants must have completed one course in typing and/or be able to type a minimum of 30 words per minute.

VOCATIONAL DIVISION. Requirements for admission to the trade preparatory curriculums and vocational programs include the qualifications listed under **SPECIFIC PROCEDURES**. In addition, it is recommended but not required that the applicant have at least one year of algebra.

Practical Nursing applicants must be high school graduates, pass the North Carolina High School Equivalency Test, or complete an Adult High School Program (available at CVTI). In addition, such applicants must furnish references, complete a special battery of tests, and submit medical and dental examination reports.

ADULT EDUCATION PROGRAMS. See Page 63.

UPGRADING, EXTENSION, AND OTHER PROGRAMS. See Page 63.

TRANSFER

Catawba Valley Technical Institute will accept credits from all institutions within the Department of Community Colleges as well as from other accredited colleges, technical institutes, business and vocational schools. Course grades of "C" or better only will be accepted and such courses must parallel the content of CVTI courses.

AUDITING

By special permission, an applicant may be admitted to certain courses as an auditor. Such students will receive no credit for the course(s). Auditors will be expected to attend classes and participate in the same manner as credit students. Fees for the auditing student will be identical to those of students enrolling for credit.



FEES AND FINANCIAL AID

In keeping with its philosophy, Catawba Valley Technical Institute seeks to provide quality education and training at the lowest cost possible. Student tuition and fees cover only a minor part of the Institute's operating expenses. Additional monies required are obtained through tax funds from Catawba County, the State of North Carolina, as well as the Federal Government.

FEES

Tuition Per Quarter:

Full-time student	\$32.00
Part-time student (per quarter credit hour)	2.50
Student Activity (Annually)	12.00
Graduation	10.00
Transcript	1.00
Late Registration	5.00

For non-residents of the State of North Carolina tuition is two and one-half times the amounts listed above.

Inasmuch as costs are so inexpensive, CVTI does not provide for the installment payment of fees and charges.

No registration or tuition fees are charged students enrolling in Adult Education, Extension, Firemanship, or other special classes. Small charges in some instances, however, may be made for instructional materials and/or textbooks required in these classes.

OTHER EXPENSES. The cost of books, supplies, and equipment varies from one program of studies to another. Generally such costs will be from \$15.00 to \$40.00 per quarter.

COURSE CREDIT WITHHELD. No degree, diploma, certificate, or course credit will be granted, nor will a transcript be furnished a student until all financial obligations to the Institute, other than student loans, have been paid.

All previously incurred expenses and accounts, including library fines, must be fully paid before a student may re-enter at the beginning of any quarter.

REFUNDS. Catawba Valley Technical Institute follows the refund policy established by the Department of Community Colleges. Tuition refunds can be made only when the student is compelled to withdraw for unavoidable reasons. Under such circumstances, up to two-thirds of the student's quarterly tuition may be refunded, if official withdrawal is made within ten (10) calendar days after the beginning of the quarter. No refund will be made of the application deposit of \$10.00 unless the appli-

cant is refused admission to the program for which he applied.

Refunds for veterans will be made in accordance with the regulations of the Veterans Administration.

FINANCIAL AID

Student financial assistance in the form of scholarships and loans is increasing annually. Generally such aid is provided on the basis of need or scholarship or a combination of these factors.

Inquiries and requests for applications regarding **SCHOLARSHIPS** and/or **LOANS** should be directed to the Student Personnel Services Offices.

SECRETARIAL SCHOLARSHIPS. The Hickory Chapter of the National Secretaries Association has in the past annually awarded three scholarships valued at \$80 each. These awards are based upon scholarship, need, and recommendations.

CATAWBA VALLEY TECHNICAL INSTITUTE FACULTY GRANT-IN-AID. The Faculty of CVTI has made available a fund for providing grants-in-aid. Such grants are made on the basis of demonstrated financial need without consideration of scholastic standing.

HICKORY OPTIMIST SCHOLARSHIPS. The Hickory Optimist Club annually awards two scholarships valued at \$200 each. Given to male graduates of Claremont Central High School, the awards are based on scholarship and financial need.

VOCATIONAL REHABILITATION AID. By the act of the United States Congress, any physically handicapped student may be eligible for financial aid and for scholarship assistance. If a prospective student has any physical limitation, the nearest office of the North Carolina Department of Vocational Rehabilitation should be contacted. If the student prefers, the CVTI Student Personnel Office may be contacted.

VETERANS AND WAR ORPHANS. All curriculum programs offered by Catawba Valley Technical Institute are approved by the Veterans Ad-





ministration for enrollment by veterans and/or war orphans under Chapter 35, Title 38, United States Code.

Individuals who served in the Armed Forces since January 31, 1955, and who were honorably discharged may qualify for benefits under the Veterans Readjustment Benefits Acts of 1966—the “Cold War G.I. Bill.”

The length of training under Veterans Programs is determined by the length of active service while the amount of benefits is determined by the number of dependents and hours in school.

Interested individuals should contact their nearest Veterans Service office or CVTI for further information.

VOCATIONAL STUDENT LOAN FUND. Using funds donated by the North Carolina Consumer Finance Association, the State Board of Education established the Vocational Student Loan Program. Students who demonstrate financial need may borrow up to \$300 annually. The interest rate is only 3½% and repayment begins one year following graduation.

COLLEGE FOUNDATION, INC. Catawba Valley Technical Institute is a member of College Foundation, Inc. Through this corporation, students may borrow up to \$1,000 yearly. The interest rate varies up to 6%, depending upon the actual source of monies borrowed.

THE ETTA BURKE PTA STUDENT LOAN FUND. Available through the North Carolina Congress of Parents and Teachers, Inc., qualified students may borrow up to \$300 per year. Interest is only 3% and repayment begins six months after termination of formal education.

WORK-STUDY PROGRAM. Under this program, a limited number of students may be employed on a part-time basis by the Institute. To be eligible, an applicant must be less than 21 years of age and need the earnings to commence or continue training on a full-time basis.

STUDENT LIFE

STUDENT PERSONNEL SERVICES

Student Personnel Services are a distinct and vitally important aspect in the development, administration, operation, and future planning of Catawba Valley Technical Institute. Such services are provided, however, primarily to effectively serve the student.

A definite program of services is offered to assist the student in satisfactorily selecting, entering, progressing within, and completing a program of study. In addition, the individual is provided numerous opportunities for personal development and social growth through a variety of planned activities. The following services are available.

COUNSELING. CVTI provides a professional, competent, and continuing counseling program. The purpose of this program is to assist students in solving academic, vocational, personal, and socio-economic problems. It is felt that this service is most valuable when requested by the student. Therefore, students needing assistance should initiate contacts with the Student Personnel Office.

TESTING. Most CVTI applicants complete the General Aptitude Test Battery administered by the North Carolina Employment Security Commission. The Institute, however, provides an extensive program of aptitude, achievement, and individual testing at the school.

ORIENTATION. All students enrolling in the fall quarter participate in student orientation. This program is designed to acquaint the student with the CVTI environment, policies, courses, philosophy, staff, and other students. Assemblies, open discussions, lectures, and student handbooks help prepare the student for beginning studies at Catawba Valley Tech.

PLACEMENT. Assistance in locating employment is available to all CVTI students and graduates. Qualified students are referred to employers





contacting the Institute and the school provides facilities for employers desiring on-campus interviews.

Students are also urged to utilize the services of the Employment Security Commission which assists in job placement throughout the entire country.

HOUSING. Catawba Valley Technical Institute was established to serve students within commuting distance of the campus. Thus, CVTI has no dormitory or housing facilities. Although the Institute assumes no responsibility for housing, assistance will be provided out-of-town students in locating suitable living accommodations if requested through the Student Personnel Office.

Housing costs vary from \$20 per month up, depending upon location, conditions, availability of food and related factors.

FACULTY ADVISOR. Each student enrolled at Catawba Valley Technical Institute will be assigned an advisor. The basic purpose of this program is to provide each student personal assistance in orientation and progress throughout the time enrolled.

The student's faculty advisor may be consulted regarding various problems, but should, in all cases, be consulted by the student in the following instances:

1. When planning for the forthcoming quarter's studies.
2. When changing courses within the current program.
3. When changing programs of study.
4. When preparing to enter a final quarter of studies to determine graduation eligibility.

HOURS OF CLASSES

Students may attend Catawba Valley Technical Institute on either a full-time or part-time basis. Normally full-time students attend four (4) to six (6) hours per day, Monday through Friday. Most programs of study for

full-time students begin between 8:00 a.m. and 10:00 a.m. and end between 1:00 p.m. and 4:00 p.m.

Evening students attend between one (1) and four (4) nights per week. Hours for these classes are between 6:00 p.m. and 10:00 p.m.

STUDENT CENTER

The initial phase of the facilities expansion program was completed in the spring of 1967. In this new addition is a modern, completely up-to-date Student Center.

The Center, a place to meet and eat, will be one of the focal points of social life on the campus. A snack bar, dining area, outdoor patio, and game area will help fill leisure moments and relieve study pressures.

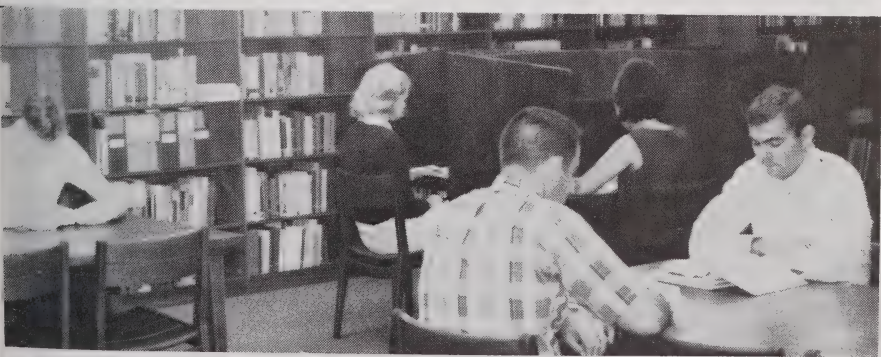
BOOKSTORE

The Institute operates a well-stocked, walk-in, self-service bookstore at which all required books, supplies, and most tools are available. In addition, other items of student interest may be purchased. While operated primarily for the students, the store is open to the general public.

Except at times of registration, the bookstore is open only during scheduled hours. All sales are on a cash basis.

LIBRARY

Based upon book content, Catawba Valley Tech has one of the most outstanding technical libraries in North Carolina. The development of a complete Learning Resource Center meeting the demands of all levels of learning is a prime goal of the Institute. The facilities completed in the spring of 1967 provide new and considerably expanded library accommodations to house more than 14,000 volumes.



ACTIVITIES

To create an environment stimulating student interest, morale, and individual growth, CVTI supports and encourages a variety of activities supplementing the academic program.



In addition to major activities such as those listed below, additional clubs, debating teams, fall and spring dances, outings, and related activities are encouraged.

Among the social highlights of the school year are the Christmas and Spring Dances. At the latter, the annually selected beauty queen is crowned Miss CVTI.

STUDENT GOVERNMENT. Each full-time curriculum student automatically is a member of the Student Government Association. The aims of this organization are to encourage student-faculty cooperation; provide democratic action in school activities; coordinate student activities; and maintain high standards for the school by upholding high personal standards of conduct.

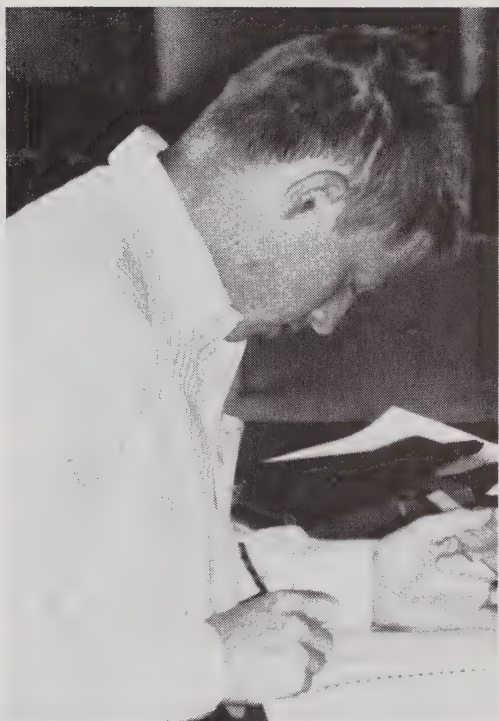
The membership of the elected body consists of fifteen representatives chosen from the student body at large.

STUDENT PUBLICATIONS. The CATVATECHI, the Catawba Tech yearbook, is a factual and photographic record of the curriculum students and their activities. Designed and prepared by the students, the CATVATECHI is published each spring. The student activity fee covers the cost of the yearbook.

The CVTI TECHNICIAN, the student newspaper publication, provides notice of significant developments and achievements related to the students and the Institute.

At present, all curriculum students are eligible for the staff of the CATVATECHI and CVTI TECHNICIAN.

CHORUS. For both male and female students with a background or interest in music, a student chorus is organized annually. In addition to special programs, performances are given at the annual graduation.



AGRI-TECH CLUB. The Agri-Tech Club, consisting of students within the Ag Business and Horticulture Departments, promotes and encourages recognition and growth of the Agri-Business and Horticultural opportunities.

ACCOUNTING CLUB. Accounting students, through this organization, further their interests at CVTI by supplementing classroom activities; by meeting with individuals employed in accounting; by acquainting employers with the CVTI accounting program and students; and by promoting friendship within the group through social activities.

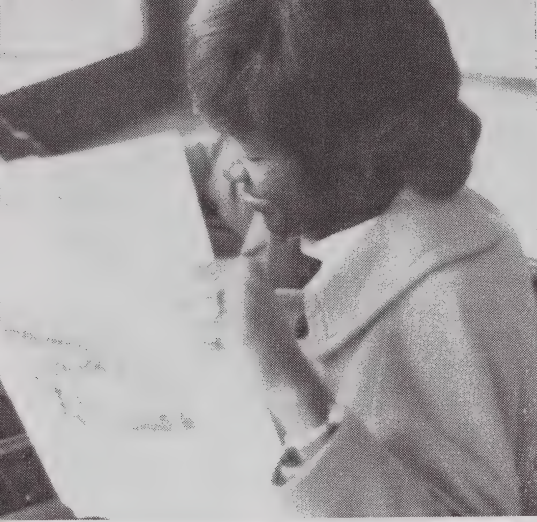
ATHLETICS. Athletic activities on campus are, by State policy, restricted to intramural activities. Scheduled play and tournaments in basketball, volleyball, and softball may be available upon student interest and equipment may be made available for other activities if sufficient interest is demonstrated.

CONDUCT

Students will be expected to conduct themselves at all times as mature adults. Students who do not respect the rights and privileges and personal property of other students and who fail to demonstrate a high regard for school facilities and property will be subject to dismissal.

STUDENT TRANSPORTATION

The CVTI student body consists of commuting students. The location of the school creates numerous traffic problems and hazards. Students are,



therefore, requested to be especially alert and careful in entering and leaving school grounds. The maximum on-campus speed is 15 miles per hour.

Areas on the campus have been designated for parking. Students are required to use these areas. Under no circumstances are students to park in front of the main building or in the reserved area to the West of the main building. Cars improperly parked may be towed away at the owner's expense.

SELECTIVE SERVICE DEFERMENT

Under present Selective Service regulations, students attending school on a full-time basis are draft exempt if maintaining satisfactory grades. A student enrolled for 12 or more credit hours is considered full-time.

The Institute will assist students by notifying Selective Service Boards of enrollment and progress when requested to so do.

HONORS AND AWARDS

ACADEMIC HONORS. Each quarter, the President of Catawba Valley Technical Institute recognizes and honors each student maintaining an academic average of 93.0 or above.

FACULTY AWARDS. The faculty of CVTI annually selects the outstanding male and female student who has contributed most to the Institute. An engraved plaque is awarded to each at graduation.

VALEDICTORIAN AWARDS. Also recognized by the faculty at graduation are the students maintaining the highest academic average in the Diploma and Associate Degree programs respectively.

COMMENCEMENT MARSHALS. From rising second-year students commencement marshals are selected on the basis of scholastic averages. The individual having the highest academic average after completing one year of studies will be designated chief marshal.

ACADEMIC STANDARDS

DEGREES, DIPLOMAS, AND CERTIFICATES

Catawba Valley Technical Institute awards the ASSOCIATE DEGREE in APPLIED SCIENCE (A.A. Sc.) upon completion of a two-year program of study in the agricultural, business, or engineering divisions.

Upon completion of a one-year vocational program of study, CVTI grants a DIPLOMA in the major area of training.

CERTIFICATES are awarded for completing non-credit short courses and special programs.

ADULT HIGH SCHOOL DIPLOMAS are awarded by the cooperating Board of Education to students satisfactorily completing the Adult High School Program.

REGISTRATION

Students enrolling in credit courses are expected to register for course work on the day(s) specified for each quarter. Registration at other than the specified day and time subjects the student to a \$5.00 late registration fee.

No registrations are permitted in credit classes after the date listed in the school calendar.

Changes in schedules must be approved by the student's faculty advisor and arranged through the Student Personnel Office.

Registration for non-credit classes is usually held at the first class meeting for the course.

COURSE LOAD

Students enrolled for 12 or more quarter hours of credit applicable to their major will be considered full-time students. Students desiring to carry more than 21 credit hours must obtain permission from the Student Personnel Office.

ATTENDANCE

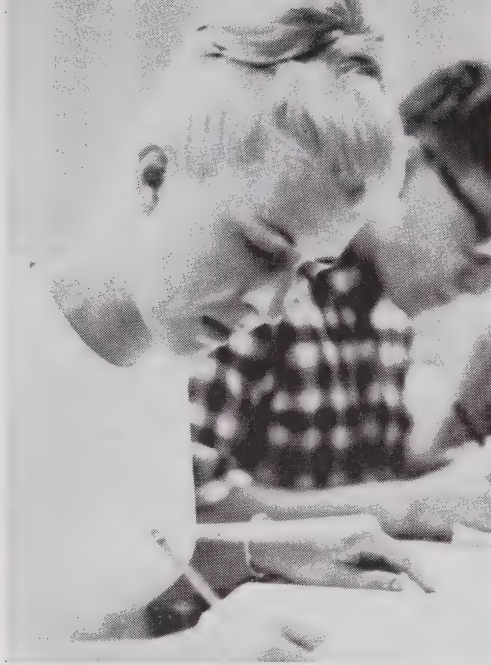
All students are expected to be present and regular in attendance for all scheduled classes and school functions. Absences will be considered justified and excusable only in cases of emergencies, serious illness, or death in the immediate family.

Any work missed because of excused absences must be made up. Unexcused absences will result in a "0" for the work missed.

Three or more unexcused absences, whether consecutive or cumulative during any given quarter, may be justification for dismissal.

ADVANCED PLACEMENT

The Institute offers a program of advanced placement and/or standing.



Any student may petition for such privileges through the Student Personnel office or the student's advisor.

The Committee for Advanced Placement will determine the credit to be allowed if any. Such allowances will be based upon the results of oral, written, and/or manipulative tests.

GRADUATION REQUIREMENTS

GENERAL. Although CVTI provides counseling and advisement services, the student will be held responsible for fulfilling all requirements for the degree or diploma which he expects to receive. It is also the student's responsibility to officially apply to the Student Personnel Office for his degree or diploma at the beginning of the last quarter the student is enrolled. The \$10.00 graduation fee must accompany the application.

Every candidate for an Associate Degree in Applied Science or a diploma must satisfy all of the requirements for the specific program from which he is graduating. Minimum credit hours and the required courses for each program have been established. These are listed under PROGRAMS OF STUDY beginning on page 25.

To be eligible for graduation, the applicant must also fulfill all financial obligations to the Institute.

Candidates for graduation are required to participate in graduation exercises to receive the degree or diploma. Exceptions to this requirement may be made if justifiable reasons are presented in writing to the Student Personnel Office.



RESIDENCE. Students graduating from Catawba Valley Technical Institute must complete a minimum of one-half the required quarter hours at CVTI. The final fifteen credit hours of studies prior to graduation must be completed at the Institute unless special permission is obtained through the Student Personnel Services Department.

GRADING SYSTEM

Grades will be issued at the end of each quarter. For unmarried students under 21 years of age, grades will be mailed to their parents. Grades for all others will be mailed to the student.

At the request of the student, grades will be provided employers or others providing financial aid.

The following numerical system will be used for all credit courses:

93-100	Excellent
86-92	Above Average
78-85	Average
70-77	Passing
Below 70	Failure
WP	Withdrawal Passing
WF	Withdrawal Failing
INC	Incomplete
AUD	Auditor (no credit)

In non-credit courses, an "S" will indicate satisfactory progress, while a "U" will designate progress in an unsatisfactory manner.

INCOMPLETES. An Incomplete (INC) may be given only under extenuating circumstances as determined by the instructor. Such a grade must be removed by the end of the following quarter. If not removed within this time, the incomplete becomes a failure. Two or more incompletes in a quarter will ordinarily result in a reduced load the following quarter. Students with three or more incompletes may register for the following quarter by special permission only.

FAILURES. A failing grade cannot be removed from a student's record. When and if the course is repeated, the second grade is recorded as the final grade for the course. Both grades will be used, however, in determining class rank or average.

TRANSCRIPTS

Transcripts are sent only upon the request of the student. No transcript of a student's record will be furnished for any student or alumnus whose financial obligations to the Institute have not been satisfied.

There will be no charge for the first transcript. A one dollar (\$1.00) fee must accompany each additional request. Allow at least one week processing and mailing time for transcript requests.

WITHDRAWALS

Students desiring to withdraw from the Institute or from a specific course must officially withdraw through the Student Personnel Office.

Students failing to officially withdraw waive all re-entry privileges for one year and all grades for the quarter will be shown as failing.

A student who officially withdraws before the end of the seventh week of the quarter in which the course is normally completed will receive a grade of WP or WF depending upon whether the work is passing or failing at the time of withdrawal.

Students cannot officially withdraw from a course after the seventh week, except in emergency situations.

ACADEMIC PROBATION

Regularly enrolled students are placed on **ACADEMIC PROBATION** for one quarter when their quarterly grade average falls below 72 or when they pass less than sixty (60) per cent of the credit hours attempted in the quarter.

A student who fails to maintain satisfactory academic progress two successive quarters may be asked to enroll in additional preparatory courses of study or to transfer to another program within the Institute in which success appears more likely.

The Student Personnel Services Department will offer full services to assist the student in overcoming academic difficulties or in selecting an alternate program of study.



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GENERAL INTRODUCTION

The following pages list alphabetically within four divisions the curriculum programs or majors to be offered by Catawba Valley Technical Institute during the 1968-69 and 1969-70 school years. Programs other than those shown are planned and may be added during the biennium. The Institute reserves the right to add, delete, or change programs and courses as may be required.

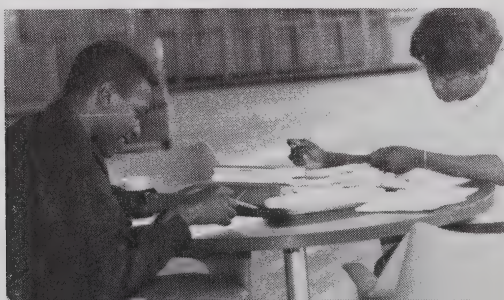
The four major divisions offering credit courses within the Institute are: Agricultural, Business, Engineering, and Vocational. An introduction to each program within these divisions as well as a list of subjects required for graduation in each curriculum is provided.

A description of each credit subject offered by CVTI is also included in this catalog. All course descriptions are listed under the department teaching the subject. The three-letter prefix in the course number indicates the department. Within each department courses are given in numerical sequence. In general, freshman subjects in the Agricultural, Business, and Engineering divisions are indicated by a "T," a three-letter prefix, and numbers between 100 and 200. Sophomore courses have the letter prefixes and are numbered between 200 and 300.

Course descriptions for the subjects required in the Agricultural, Business, Engineering, and Vocational programs begin on page 72.

The contact hours shown in this bulletin are minimal. It is a policy of the Institute to permit students to enroll in additional subjects and laboratory work beyond those shown in the catalog in order to broaden their training.

When in any quarter the total weekly contact hours listed are fewer than twenty-five in a technical curriculum and fewer than thirty in a vocational curriculum, a student may enroll on request and with the approval of the Institute for additional instructional hours. Hours may be added to total twenty-five contact hours per week in technical programs or thirty hours per week in a vocational curriculum.



AGRICULTURE TECHNOLOGY DIVISION

ASSOCIATE DEGREES OF APPLIED SCIENCE

IN

AGRICULTURAL BUSINESS

ORNAMENTAL HORTICULTURE

AGRICULTURAL BUSINESS TECHNOLOGY

Rapid technological changes in farming and related agricultural businesses have given rise to the need for more technically trained people. A variety of agricultural businesses and industries employ persons to assist in marketing, processing, and distributing farm products and providing services to the farmer. Many responsible positions in agricultural businesses and industries require technical training not available in high schools or in four-year colleges.

As agricultural business and industry firms expand in size and number, they are experiencing rapid changes in the technologies of production, sales, and management in an increasingly competitive environment. It is anticipated that these changes in agriculture and the general economic environment will occur at an even faster rate in the next several years. Future employees of such firms must be prepared to understand these changes and adapt themselves accordingly.

The Agricultural Business Curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business, including agricultural production. It combines knowledge of agriculture with business training and successful completion of the program should enable the graduate to assume the responsibilities found in the many and varied opportunities in an Agri-Business firm.

Upon graduation, an individual should qualify for various jobs in agricultural business and industry: for example, salesman or store manager in farm supply stores; agricultural field serviceman; salesman, demonstrator or plant manager of feed and food companies; farm products inspector; and salesman or office managers of farm products marketing firms.



The trend toward larger farming operations with increased non-farm control of production means there will be greater employment opportunities for well-trained individuals who can efficiently and profitably supervise the production and marketing of agricultural products.

AGRICULTURAL BUSINESS CURRICULUM

COURSE TITLE			Hours		Quarter Hours Credit
			Per Week Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-CHM	101	Chemistry	4	2	5
T-MAT	110	Business Mathematics	5	0	5
T-AGR	125	Animal Science	5	2	6
			17	4	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-AGR	182	Soil Science and Fertilizers	5	2	6
T-BUS	120	Accounting	5	2	6
T-BUS	101	Introduction to Business	5	0	5
			18	4	20
THIRD QUARTER					
T-AGR	—	Agricultural Business Elective	5	0	5
T-ENG	103	Report Writing	3	0	3
T-BUS	110	Office Machines	2	2	3
T-BUS	121	Accounting	5	2	6
T-AGR	104	Introduction to Agricultural Economics	3	2	4
			18	6	21
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	123	Business Finance	3	0	3
T-BUS	232	Sales Development	3	0	3
T-AGR	204	Farm Business Management	5	2	6
T-AGR	170	Plant Science	5	2	6
			19	4	21
FIFTH QUARTER					
T-AGR	205	Agricultural Marketing	5	2	6
T-AGR	218	Agricultural Mechanization	3	2	4
T-SSC	—	Social Science	3	0	3
T-AGR	—	Agricultural Business Elective*	3	0	3
			14	4	16
SIXTH QUARTER					
T-AGR	228	Livestock Diseases and Parasites	3	2	4
T-AGR	201	Agriculture Chemicals	5	2	6
T-SSC	—	Social Science	3	0	3
T-BUS	102	Typewriting (or elective)	2	3	3
			13	7	16

* At least six hours of electives should be in agricultural courses.

Total Hours in Required Courses	105
Minimum Hours in Electives	8
Total Hours Required	<hr/> 113

ORNAMENTAL HORTICULTURE TECHNOLOGY

Current demand for trained technicians in the field of Ornamental Horticulture has created an urgent need for specialized training in the Horticultural skills.

Graduates in the creative and interesting field of Landscape Design are assured of immediate and rewarding employment. Industries and Institutions are looking for trained workers to supervise the maintenance of extensive landscape plantings. Nurseries and Garden Centers need managers, foremen, salesmen, and supervisors. Dynamic growth in outdoor recreation has brought about an unprecedented demand for parks and golf course superintendents, technicians, horticulturists, and agronomists. Only those workers who have the training and interest can qualify for the greater responsibility and earn the better pay.

Work experience programs, both on and off the campus, will enable the student to develop the skills and knowledge necessary for the many challenges and rewards employment opportunities in this field provide.



ORNAMENTAL HORTICULTURE CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-AGR	170	Plant Science	5	2	6
T-CHM	101	Chemistry	4	2	5
T-MAT	110	Business Mathematics	5	0	5
			17	4	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-AGR	185	Soil Science and Fertilizers	5	2	6
T-AGR	151	Plant Materials, Identification and Use I	2	4	4
T-BUS	101	Introduction to Business	5	0	5
			15	6	18
THIRD QUARTER					
T-BUS	102	Typewriting (or elective)	2	3	3
T-ENG	103	Report Writing	3	0	3
T-AGR	153	Plant Materials, Identification and Use II	2	2	3
T-AGR	154	Ornamental Plant Protection	3	4	5
T-AGR	152	Plant Propagation	2	3	3
T-AGR	104	Introduction to Agricultural Economics	3	2	4
			15	14	21
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	232	Sales Development	3	0	3
T-AGR	150	General Horticulture	3	2	4
T-AGR	251	Landscape Design	2	4	4
T-AGR	254	Greenhouse Management	3	2	4
			14	8	18
FIFTH QUARTER					
T-AGR	253	Landscape Gardening	3	2	4
T-AGR	255	Arboriculture	3	2	4
T-BUS	235	Business Management	3	0	3
T-BUS	120	Accounting	5	2	6
T-SSC	—	Social Science	3	0	3
			17	6	20
SIXTH QUARTER					
T-AGR	257	Nursery Management	3	2	4
T-AGR	201	Agriculture Chemicals	5	2	6
T-AGR	258	Turf Management	2	2	3
T-SSC	—	Social Science	3	0	3
T-AGR	—	Horticulture Elective	4	0	4
			17	6	20

Total Hours in Required Courses 109

Minimum Hours in Electives 4

Total Hours Required 113

BUSINESS TECHNOLOGY DIVISION

ASSOCIATE DEGREES OF APPLIED SCIENCE

IN

ACCOUNTING
BUSINESS ADMINISTRATION
DATA PROCESSING
EXECUTIVE SECRETARIAL

GENERAL OFFICE
LEGAL SECRETARIAL
MEDICAL SECRETARIAL
TRAFFIC & TRANSPORTATION

ACCOUNTING TECHNOLOGY

Accounting is one of the fastest growing employment fields in America today, and the job outlook for good accountants seems bright for many years to come. These opportunities result from the tremendous business and industrial expansion in all parts of the country. Because of this emphasis, there is a growing need for trained people in the area of accounting to help managers keep track of a firm's financial operation. The Accounting Curriculum is designed to fill this need by offering students the necessary accounting theories and skills for entry into the accounting profession.

The specific objectives of the Accounting Curriculum are to develop: (1) Understanding of the principles of organization and management in business operations; (2) Understanding the fundamentals of accounting and analysis of financial statements; and (3) Understanding and skill in effective communications for business.

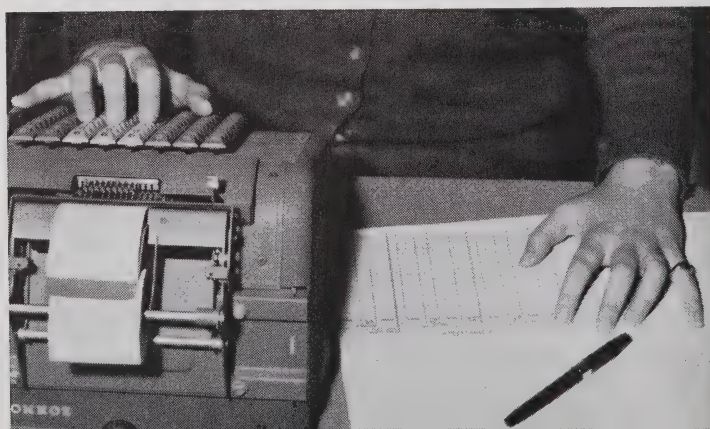
The duties and responsibilities of an accountant vary somewhat in different firms. Some of the duties an accountant might assume are to: record transactions, render periodic reports, maintain cost records, make special reports, complete tax returns, audit books, and advise management in areas of financial affairs.

The graduate of the Accounting Curriculum may qualify for various jobs in business and industry leading to any of the following accounting positions: accounting clerk, payroll clerk, accounting machine operator, auditor, and cost accountant. This training plus further experience should prepare graduates to become office managers, accounting supervisors, and to fill other responsible positions in a business firm.

ACCOUNTING CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	120	Accounting	5	2	6
T-ECO	102	Economics	3	0	3
			<hr/>	<hr/>	<hr/>
			18	2	19

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
SECOND QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	121	Accounting	5	2	6
T-BUS	115	Business Law	3	0	3
T-ECO	104	Economics	3	0	3
T-SSC	—	Social Science	3	0	3
			17	2	18
THIRD QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	222	Accounting	5	2	6
T-BUS	110	Office Machines	2	2	3
T-SSC	—	Social Science	3	0	3
T-BUS	116	Business Law	3	0	3
			16	4	18
FOURTH QUARTER					
T-ENG	103	Report Writing	3	0	3
T-EDP	104	Introduction to Data Processing Systems	3	2	4
T-BUS	223	Accounting	5	2	6
T-BUS	123	Business Finance	3	0	3
T-BUS	102	Typewriting (or elective)	2	3	3
			16	7	19
FIFTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	225	Cost Accounting	3	2	4
T-BUS	235	Business Management	3	0	3
T-BUS	124	Business Finance	3	0	3
T-BUS	—	Business Elective	4	0	4
			16	2	17
SIXTH QUARTER					
T-BUS	229	Taxes	3	2	4
T-BUS	269	Auditing	3	2	4
T-ENG	206	Business Communications	3	0	3
T-BUS	—	Business Elective(s)	6	0	6
			15	4	17
Total Hours in Required Courses					98
Minimum Hours in Electives					10
Total Hours Required					108



BUSINESS ADMINISTRATION TECHNOLOGY

In North Carolina the opportunities in business are increasing. With the increasing population and industrial development in this State, business has become more competitive and automated. Better opportunities in business will be filled by students with specialized education beyond the high school level. The Business Administration Curriculum is designed to prepare the student for employment in one of many occupations common to business. Training is aimed at preparing the student in many phases of administrative work that might be encountered in the average business.

The specific objectives of the Business Administration Curriculum are to develop: (1) Understanding of the principles of organization and management in business operations; (2) Understanding our economy through study and analysis of the role of production and marketing; (3) Knowledge in specific elements of accounting, finance, and business law; (4) Understanding and skill in effective communication for business; (5) Knowledge of human relations as they apply to successful business operations in a rapidly expanding economy.

The graduate of the Business Administration Curriculum may enter a variety of career opportunities from beginning sales person or office clerk to manager trainee. The duties and responsibilities of this graduate vary in different firms. These duties might include: making up and filing reports, tabulating and posting data in various books, sending out bills, checking calculations, adjusting complaints, operating various office machines, and assisting managers in supervising. Positions are available in businesses such as advertising; banking; credit, finance, retailing; wholesaling; hotel, tourist, and travel industry; insurance; transportation; and communications.

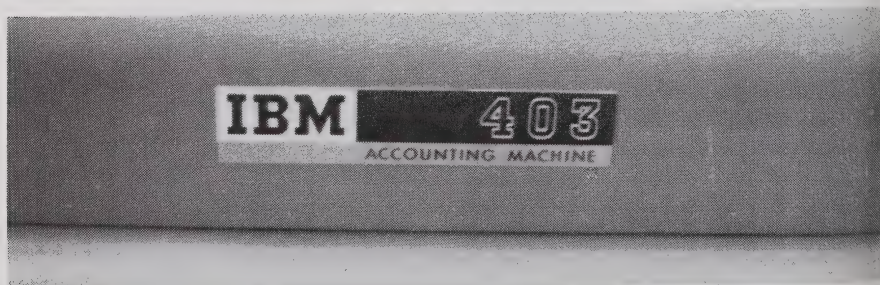
BUSINESS ADMINISTRATION TECHNOLOGY CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-ECO	102	Economics	3	0	3
T-BUS	120	Accounting	5	2	6
			<hr/>	<hr/>	<hr/>
			18	2	19
SECOND QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	121	Accounting	5	2	6
T-BUS	115	Business Law	3	0	3
T-ECO	104	Economics	3	0	3
T-SSC	—	Social Science	3	0	3
			<hr/>	<hr/>	<hr/>
			17	2	18

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
THIRD QUARTER					
T-ENG	102	Composition	3	0	3
T-SSC	---	Social Science	3	0	3
T-BUS	116	Business Law	3	0	3
T-BUS	110	Office Machines	2	2	3
T-BUS	222	Accounting	5	2	6
			16	4	18
FOURTH QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	232	Sales Development	3	0	3
T-EDP	104	Introduction to Data Processing Systems	3	2	4
T-BUS	239	Marketing	5	0	5
T-BUS	123	Business Finance	3	0	3
T-BUS	102	Typewriting (or elective)	2	3	3
			19	5	21
FIFTH QUARTER					
T-ENG	204	Oral Communications	3	0	3
T-BUS	243	Advertising	3	2	4
T-BUS	235	Business Management	3	0	3
T-BUS	124	Business Finance	3	0	3
T-BUS	---	Business Electives	3	0	3
			15	2	16
SIXTH QUARTER					
T-BUS	229	Taxes	3	2	4
T-BUS	271	Office Management	3	0	3
T-BUS	272	Principles of Supervision	3	0	3
T-ENG	206	Business Communications	3	0	3
T-BUS	---	Business Electives	3	0	3
			15	2	16
Total Hours in Required Courses					102
Minimum Hours in Electives					6
Total Hours Required					108

DATA PROCESSING TECHNOLOGY

The data processing field is one of the most rapidly expanding areas today. One who chooses data processing as a career can expect an exciting and challenging future with many advancement opportunities. The data processing curriculum is designed to familiarize the student with data processing theory and equipment and to broaden the student's business knowledge.



The specific objectives of the data processing curriculum are to develop: (1) general knowledge of the basic types and uses of data processing equipment; (2) knowledge of various programming procedures and programming languages; (3) technical understanding of the over-all concept of data processing for employment leading to a position as a systems analyst.

The data processing technology graduate will fulfill the requirements for numerous positions. Some are key punch operators, tab machines operators, and computer programmers. Immediate employment is available for the graduates in the data processing curriculum.

DATA PROCESSING CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	120	Accounting	5	2	6
T-EDP	104	Introduction to Data Processing	3	2	4
			18	4	20
SECOND QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	121	Accounting	5	2	6
T-BUS	115	Business Law	3	0	3
T-ECO	102	Economics	3	0	3
T-EDP	102	Unit Record Panel Wiring	3	2	4
			17	4	19
THIRD QUARTER					
T-ENG	102	Composition	3	0	3
T-SSC	—	Social Science	3	0	3
T-BUS	116	Business Law	3	0	3
T-BUS	239	Marketing	5	0	5
T-EDP	105	Procedure Writing, Flow Charting, Block Diagraming	3	2	4
			17	2	18
FOURTH QUARTER					
T-ENG	103	Report Writing	3	0	3
T-SSC	—	Social Science	3	0	3
T-BUS	232	Sales Development	3	0	3
T-BUS	123	Business Finance	3	0	3
T-BUS	110	Office Machines	2	2	3
T-EDP	201	Introduction to Computers	3	2	4
			17	4	19
FIFTH QUARTER					
T-ENG	204	Oral Communications	3	0	3
T-BUS	243	Advertising	3	2	4
T-BUS	235	Business Management	3	0	3
T-BUS	124	Business Finance	3	0	3
T-ECO	104	Economics	3	0	3
T-EDP	210	RPG Programming Languages	4	0	4
			19	2	20

COURSE TITLE			Hours		Quarter Hours Credit
			Per Week		
			Class	Lab.	
SIXTH QUARTER					
T-BUS	229	Taxes	3	2	4
T-BUS	271	Office Management	3	0	3
T-BUS	272	Principles of Supervision	3	0	3
T-ENG	206	Business Communications	3	0	3
T-EDP	220	Systems Analyst Project	5	0	5
			17	2	18
Total Hours in Required Courses					114
Minimum Hours in Electives					0
Total Hours Required					114

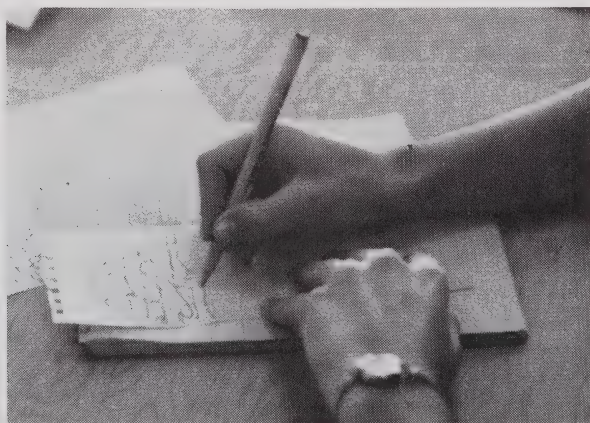
EXECUTIVE SECRETARIAL TECHNOLOGY

Almost 11 million people were employed in clerical or some closely related type of work in 1965. More than 2 million of these were employed in occupations requiring stenographic skills. In fact, more individuals are employed in the clerical fields than in any other single category.

A very rapid increase in employment in the late 1960's and early 1970's is anticipated. Openings may total more than 200,000 annually. Local employment opportunities parallel national trends.

The executive secretarial curriculum is designed to develop the necessary secretarial skills in typing, dictation, transcription, operation of office machines, and terminology for employment in the business world. The special training in secretarial subjects is supplemented by related courses in mathematics, accounting, business law, and personality development.

The graduate of the Executive Secretarial curriculum may be employed as a stenographer or a secretary as well as in a variety of other clerical occupations. Stenographers are primarily responsible for taking dictation and transcribing letters, memoranda, or reports. The secretary, in addition to taking



dictation and transcribing, is given more responsibility in connection with meeting office callers, screening telephone calls, handling numerous routine duties, private and confidential records, and a variety of business details on her own initiative. Positions are available in a variety of businesses such as insurance companies, banks, marketing institutions, financial firms, as well as all types of manufacturing firms.

EXECUTIVE SECRETARIAL CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	106	Shorthand (or Elective)	2	3	3
			17	6	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	103	Typewriting (or Elective)	2	3	3
T-BUS	107	Shorthand	3	2	4
T-BUS	110	Office Machines	2	2	3
T-BUS	112	Filing	3	0	3
			13	7	16
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	104	Typewriting	2	3	3
T-BUS	108	Shorthand	3	2	4
T-BUS	115	Business Law	3	0	3
T-BUS	120	Accounting	5	2	6
			16	7	19
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	206E	Executive Dict. & Transcription	3	2	4
T-BUS	205	Advanced Typewriting	2	3	3
T-BUS	211	Office Machines	2	2	3
T-BUS	—	Business Elective(s)	6	0	6
			16	7	19
FIFTH QUARTER					
T-ENG	206	Business Communication	3	0	3
T-BUS	207E	Executive Dict. & Transcription	3	2	4
T-BUS	214	Secretarial Procedures	3	2	4
T-EDP	104	Introduction to DP Systems	3	2	4
T-SSC	—	Social Science	3	0	3
			15	6	18
SIXTH QUARTER					
T-BUS	208E	Executive Dict. & Transcription	3	2	4
T-BUS	271	Office Management	3	0	3
T-BUS	210E	Typing Office Practice	3	2	4
T-SSC	—	Social Science	3	0	3
T-BUS	—	Business Elective	3	0	3
			15	4	17
Total Hours in Required Courses					99
Minimum Hours in Electives					9
Total Hours Required					108

GENERAL OFFICE TECHNOLOGY

More people are now employed in clerical occupations than in any other single job category. Automation and increased production will mean that these people will need more technical skills and a greater adaptability for diversified types of jobs.

The Clerical Occupations curriculum is designed to develop the necessary variety of skills for employment in the business world. Specialized training in skill areas is supplemented by related courses in mathematics, accounting, business law, and applied psychology.

The graduate of the Clerical Occupations curriculum may be employed as an administrative assistant, accounting clerk, assistant office manager, bookkeeper, file clerk, machine transcriptionist, or a variety of other clerical-related jobs. Positions are available in almost every type of business, large or small.

GENERAL OFFICE TECHNOLOGY CURRICULUM

COURSE TITLE			Hours		Quarter Hours Credit
			Class	Per Week Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-ECO	102	Economics	3	0	3
			18	3	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	103	Typewriting (or Elective)	2	3	3
T-BUS	110	Office Machines	2	2	3
T-BUS	115	Business Law	3	0	3
T-BUS	120	Accounting	5	2	6
			15	7	18
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	104	Typewriting	2	3	3
T-BUS	112	Filing	3	0	3
T-BUS	116	Business Law	3	0	3
T-BUS	121	Accounting	5	2	6
			16	5	18
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	205	Advanced Typewriting	2	3	3
T-BUS	211	Office Machines	2	2	3
T-BUS	232	Sales Development	3	0	3
T-BUS	212	Machine Transcription—Business	1	2	2
T-BUS	—	Business Elective(s)	3	0	3
			14	7	17
FIFTH QUARTER					
T-ENG	206	Business Communication	3	0	3
T-BUS	214	Secretarial Procedures	3	2	4
T-EDP	104	Introduction to DP Systems	3	2	4
T-SSC	—	Social Science	3	0	3
T-BUS	—	Business Elective(s)	6	0	6
			18	4	20

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
SIXTH QUARTER					
T-BUS	271	Office Management	3	0	3
T-BUS	229	Taxes	3	2	4
T-BUS	210E	Typing Office Practice	2	3	3
T-SSC	---	Social Science	3	0	3
T-BUS	---	Business Elective(s)	3	0	3
			14	5	16
Total Hours in Required Courses					96
Minimum Hours in Electives					12
Total Hours Required					108

LEGAL SECRETARIAL TECHNOLOGY

The demand for better qualified legal secretaries in our ever-expanding legal profession is becoming more and more acute. The purpose of this program is to provide specialized training in the accepted procedures required by the legal profession.

The curriculum is designed to develop the necessary secretarial skills in typing, dictation, transcription, and terminology for employment in the legal profession. The specialized legal training is supplemented by related courses in mathematics, accounting, law, and personality development.

The graduate of the Legal Secretarial program will be a specialist, having a knowledge of legal terminology, as well as skill in dictation and accurate transcription of legal records, reports, letters, and documents. The duties may consist of meeting office callers, screening telephone calls, filing, scheduling appointments, handling private or confidential records and reports, taking dictation and transcribing letters, memoranda, and reports, and/or possible supervision of others on the clerical staff.

Opportunities for employment exist in a variety of secretarial positions in the legal profession such as in law firms, lawyers' offices, courts, and state and government offices.



LEGAL SECRETARIAL CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	106	Shorthand (or Elective)	2	3	3
			17	6	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	103	Typewriting (or Elective)	2	3	3
T-BUS	107	Shorthand	3	2	4
T-BUS	110	Office Machines	2	2	3
T-BUS	112	Filing	3	0	3
			13	7	16
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	104	Typewriting	2	3	3
T-BUS	108	Shorthand	3	2	4
T-BUS	115	Business Law	3	0	3
T-BUS	120	Accounting	5	2	6
			16	7	19
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	206L	Legal Dict. & Transcription	3	2	4
T-BUS	205	Advanced Typewriting	2	3	3
T-BUS	211	Office Machines	2	2	3
T-BUS	183L	Legal Term. & Vocabulary	3	0	3
T-BUS	---	Business Elective	3	0	3
			16	7	19
FIFTH QUARTER					
T-ENG	206	Business Communication	3	0	3
T-BUS	207L	Legal Dict. & Transcription	3	2	4
T-BUS	214	Secretarial Procedures	3	2	4
T-EDP	104	Introduction to DP Systems	3	2	4
T-SSC	---	Social Science	3	0	3
			15	6	18
SIXTH QUARTER					
T-BUS	208L	Legal Dict. & Transcription	3	2	4
T-BUS	271	Office Management	3	0	3
T-BUS	210L	Typing Office Practice	3	2	4
T-SSC	---	Social Science	3	0	3
T-BUS	---	Elective, Business	3	0	3
			15	4	17
			Total Hours in Required Courses		102
			Minimum Hours in Electives		6
			Total Hours Required		108

MEDICAL SECRETARIAL TECHNOLOGY

The population explosion and the rapid advancements within the field of medical knowledge have created an acute need for medical personnel, including medical secretaries. The purpose of this program is to provide



specialized training in the accepted procedures required by the medical and related health professions.

The Medical Secretarial curriculum is designed to develop required skills such as typing, dictation, and transcription, as well as medical terminology and vocabulary. The special training in secretarial subjects is supplemented by needed related courses in mathematics, accounting, business law, personality development, human relations, human anatomy, and physiology.

The Medical Secretary may be employed in a variety of positions such as in physicians' offices, private and public hospitals, federal, state and local health programs, insurance offices, and pharmaceutical firms. The duties of the graduate may include taking dictation, transcribing, and typing letters, memoranda and medical reports; meeting office callers, screening telephone calls, scheduling appointments; maintaining medical records and insurance reports, as well as certain financial records.

MEDICAL SECRETARIAL CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	102	Typewriting (or Elective)	2	3	3
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-BUS	106	Shorthand (or Elective)	2	3	3
			17	6	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	103	Typewriting (or Elective)	2	3	3
T-BUS	107	Shorthand	3	2	4
T-BUS	110	Office Machines	2	2	3
T-BUS	112	Filing	3	0	3
			13	7	16
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	104	Typewriting	2	3	3
T-BUS	108	Shorthand	3	2	4
T-BUS	115	Business Law	3	0	3
T-BUS	120	Accounting	5	2	6
			16	7	19

			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-BUS	206M	Medical Dict. & Transcription	3	2	4
T-BUS	205	Advanced Typewriting	2	3	3
T-BUS	211	Office Machines	2	2	3
T-BUS	181M	Human Anatomy and Physiology	3	0	3
T-SSC	—	Social Science	3	0	3
			16	7	19
FIFTH QUARTER					
T-ENG	206	Business Communication	3	0	3
T-BUS	207M	Medical Dict. & Transcription	3	2	4
T-BUS	214	Secretarial Procedures	3	2	4
T-EDP	104	Introduction to DP Systems	3	2	4
T-BUS	183M	Medical Term. & Vocabulary	3	0	3
			15	6	18
SIXTH QUARTER					
T-BUS	208M	Medical Dict. & Transcription	3	2	4
T-BUS	271	Office Management	3	0	3
T-BUS	210M	Typing Office Practice	3	2	4
T-BUS	284M	Medical Term. & Vocabulary	3	0	3
T-SSC	—	Social Science	3	0	3
			15	4	17
Total Hours in Required Courses					108
Minimum Hours in Electives					0
Total Hours Required					108

TRAFFIC AND TRANSPORTATION TECHNOLOGY

North Carolina, in its tremendous industrial growth, has a need for more highly trained and skilled personnel in the traffic and transportation industry. The purpose of this curriculum is to provide training in new techniques, and an understanding of the latest State and Federal regulations applicable to traffic and transportation, which should enable the student to accept employment in a higher-level job in the traffic and transportation industry.

The specific objectives of the Traffic and Transportation Curriculum are to develop: (1) understanding of the principles of organization and management in business operations and the traffic and transportation industry; (2) understanding and skill in effective communication for business; (3) understanding of the Interstate Commerce Act and related acts as they apply to traffic and transportation; and (4) understanding of the role traffic and transportation plays in the expanding business economy.

The graduate of this curriculum may seek career opportunities in the traffic and transportation industry as traffic representative, claims representative, dispatcher, rate analyst, and operational supervisor. A traffic representative is responsible for calling on the shipping public and selling the services of his respective company for their use. A claims representative renders and investigates claims for losses, shortages, damages, or overcharges

on shipments of merchandise and adjusts claims. The dispatcher is responsible for dispatching men or equipment to prevent or rectify disruptions in service in all departments of a transportation system. The rate specialist determines rates, routes, and classifications applicable to merchandise or material shipped or received by common carrier. The responsibilities of the operational supervisor include the supervision of those activities that will assure the smooth and constant flow of the traffic through the terminal area.

This training, with additional experience, should qualify the student for positions as claims manager, operational manager, and manager of transportation terminals.

TRAFFIC AND TRANSPORTATION CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-MAT	110	Business Mathematics	5	0	5
T-BUS	101	Introduction to Business	5	0	5
T-ECO	102	Economics	3	0	3
T-BUS	120	Accounting	5	2	6
			18	2	19
SECOND QUARTER					
T-ENG	101	Grammar	3	0	3
T-BUS	121	Accounting	5	2	6
T-BUS	115	Business Law	3	0	3
T-ECO	104	Economics	3	0	3
T-BUS	178	Traffic and Transportation	3	0	3
			17	2	18
THIRD QUARTER					
T-ENG	102	Composition	3	0	3
T-BUS	116	Business Law	3	0	3
T-BUS	179	Traffic & Transportation	3	0	3
T-BUS	—	Business Elective	5	0	5
T-ECO	106	Economics of Transportation	3	0	3
			17	0	17
FOURTH QUARTER					
T-ENG	103	Report Writing	3	0	3
T-BUS	232	Sales Development	3	0	3
T-BUS	285	ICC Law	3	0	3
T-BUS	280	Traffic and Transportation	3	0	3
T-BUS	290	Motor Carrier	3	0	3
T-BUS	102	Typewriting or Elective	2	3	3
			17	3	18
FIFTH QUARTER					
T-ENG	204	Oral Communications	3	0	3
T-BUS	286	ICC Law	3	0	3
T-BUS	291	Motor Carrier	3	0	3
T-BUS	281	Traffic and Transportation	3	0	3
T-SSC	—	Social Science	3	0	3
T-BUS	110	Business Machines	2	2	3
			17	2	18

COURSE TITLE			Hours Per Week		Quarter Hours Credit
SIXTH QUARTER			Class	Lab.	
T-BUS	287	ICC Law	3	0	3
T-BUS	295	Traffic Claims	3	0	3
T-BUS	299	Traffic Management	3	0	3
T-SSC	—	Social Science	3	0	3
T-ENG	206	Business Communications	3	0	3
T-BUS	—	Business Elective	2	3	3
			17	3	18
Total Hours in Required Courses					97
Minimum Hours in Electives					11
Total Hours Required					108



ENGINEERING TECHNOLOGY DIVISION

ASSOCIATE DEGREES OF APPLIED SCIENCE

IN

ARCHITECTURAL DRAFTING AND DESIGN
ELECTROMECHANICAL
ELECTRONICS

FURNITURE DRAFTING AND DESIGN
FURNITURE PRODUCTION
MECHANICAL DRAFTING AND DESIGN

ARCHITECTURAL DRAFTING AND DESIGN TECHNOLOGY

This curriculum was designed in cooperation with the North Carolina Chapter of the American Institute of Architects. Its basic purpose is to train architectural draftsmen for the architect's office and the building industry.

Through a survey made of North Carolina AIA members, it was determined that a large number of architectural draftsmen is needed to fill existing vacancies. Projections show that this need will continue to expand at a tremendous rate.

This program provides the individual with the technical drafting skills and knowledge leading to employment and rapid advancement into related areas of work as job experience is obtained.

Architectural drafting technicians are concerned with turning the architect's design sketches into complete and accurate working plans and detail drawings for construction purposes. He may prepare floor plans, elevation drawings, construction details, mechanical equipment layouts, door, window, and room schedules, and site plans. The drafting technician will be involved in work requiring a knowledge of building codes, specifications, and contract documents.

With experience, the technician may be involved in estimating, field inspection, or in collecting site data and other information pertinent to construction.

ARCHITECTURAL DRAFTING AND DESIGN CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Work, Energy, Power	3	2	4
T-DFT	106	Architectural Drafting	2	6	4
T-CIV	105	Architectural Materials & Methods	3	3	4
			16	11	20

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	104	Physics: Light and Sound	3	2	4
T-DFT	107	Architectural Drafting	2	6	4
T-AHR	106	Architectural Mechanical Equipment	3	3	4
			16	11	20
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-MAT	103	Technical Mathematics	5	0	5
T-PHY	103	Physics: Electricity	3	2	4
T-DFT	108	Architectural Drafting	0	9	3
T-CIV	114	Statics	5	0	5
			16	11	20
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-CIV	216	Strength of Materials	3	2	4
T-DFT	220	Architectural Drafting	2	9	5
T-CIV	101	Surveying	2	6	4
			10	17	16
FIFTH QUARTER					
T-SSC	—	Social Science	3	0	3
T-DFT	221	Architectural Drafting	2	9	5
T-DFT	223	Office Practice Seminar	2	0	2
T-DFT	235	Codes, Specifications and Contact Documents	3	3	4
T-DFT	—	Drafting Elective	4	0	4
			14	12	18
SIXTH QUARTER					
T-SSC	—	Social Science	3	0	3
T-DFT	222	Architectural Drafting	2	9	5
T-DFT	236	Construction Estimating and Field Inspection	3	3	4
T-DFT	—	Drafting Elective	5	0	5
			13	12	17
Total Hours in Required Courses					102
Minimum Hours in Electives					9
Total Hours Required					111



ELECTROMECHANICAL TECHNOLOGY

The Electromechanical technology is among the newest fields in engineering. Industry has been hiring the electronic technician to handle various Electrical-Electronic aspects of equipment. Also required was a mechanical technician to handle the mechanical aspects of the equipment. Advances in both manufacturing and maintenance techniques have made it apparent that it would be more productive for industry to bridge the gap between the two technical specialties.

Thus, the purpose of this curriculum is to provide the individual with the required skills and knowledges through the integrated electrical-electronic and mechanical engineering specialties. Courses provided give the student a background in electricity-electronics, such as Fundamentals of Electricity and Wave Shaping and Pulse Circuits; in mechanical operations and functions, such as, Machine Processes and Mechanisms; and in Electromechanical Systems covering such devices as computers, servo-mechanisms, and numerical control systems.

The Electromechanical Technician fabricates, tests, analyzes, and adjusts precision electromechanical instruments, such as temperature probes and aerodynamic probes. He uses handtools and metal working machines such as bench lathe, milling machine, punch press and drill press to fabricate housings, jigs, and holding devices.

He may assemble wires, insulation, and electrical components, such as, resistors and capacitors, using holding fixtures, files, soldering tools, cutters, pliers, and screwdriver. Part of the job responsibilities involve testing assembled instruments for circuit continuity and operational reliability using multimeter, oscilloscope, oscillator, voltmeter, and bridge. Such a technician will record, analyze and submit written reports regarding procedures and results.

The Electromechanical Technician has excellent employment opportunities. A recent nationwide research project showed that, in industries employing both electronics and mechanical technicians, the need is for 25 per cent more Electromechanical Technicians by 1970 than for both electronics and mechanical technicians combined. Potential employment possibilities with industry, business, and government are available in maintenance, production, research, development, or sales as an engineering assistant, engineering aide, or trouble shooter.



ELECTROMECHANICAL CURRICULUM

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
	Class	Lab.			
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Work, Energy, Power	3	2	4
T-ELC	101	Fundamentals of Electricity	4	6	6
			15	8	18
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-DFT	101	Technical Drafting	1	4	2
T-PHY	102	Physics: Properties of Matter	3	2	4
T-ELC	102	Fundamentals of Electricity	4	6	6
			16	12	20
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-MAT	103	Technical Mathematics	5	0	5
T-ELN	105	Control Devices	5	6	7
T-ELN	101	Electronic Instruments and Measurements	1	6	3
			14	12	18
FOURTH QUARTER					
T-ENG	201	Oral Communications	3	0	3
T-MEC	101	Machine Processes	2	4	4
T-PHY	104	Physics: Light & Sound	3	2	4
T-MEC	110	Fundamental Mechanisms	2	4	4
T-CYB	201	Electromechanical Systems	3	2	4
			13	12	19
FIFTH QUARTER					
T-SSC	—	Social Science	3	0	3
T-ELN	214	Wave Shaping and Pulse Circuits	2	2	3
T-CYB	202	Electromechanical Systems	3	6	5
T-MEC	235	Hydraulics & Pneumatics	3	3	4
T-ELN	—	Electromechanical Elective(s)	4	0	4
			15	11	19
SIXTH QUARTER					
T-SSC	—	Social Science	3	0	3
T-ELN	240	Digital Computers	3	0	3
T-CYB	203	Electromechanical Systems	3	6	6
T-ELN	—	Electromechanical Elective(s)	5	0	5
			14	6	17
Total Hours in Required Courses					102
Minimum Hours in Electives					9
Total Hours Required					111

ELECTRONICS TECHNOLOGY

The field of electronics has developed at a tremendously rapid pace, especially since 1940. For many years the major concern of electronics was in the area of communications. Developments during and following World War II have revolutionized production techniques. Completely new industries have been established to supplement the need and demand for electronics equipment. This rapid growth of the electronics industry has been accompanied by an equally phenomenal growth in the demand for qualified technicians—both men and women.

This program provides a basic background in electronics theory and practical applications for business and industry. The electronics technician may start in one or more of the following areas: research, design, development, production, maintenance, or sales. He may be an engineering assistant, a laboratory technician, supervisor, or equipment specialist.

Upon completion of this program, students will find employment opportunities in such fields as radio and television production, radar, sonar, telemetering, and other forms of communication such as telephone; industrial and medical measuring, recording, indicating, and controlling devices; navigational equipment; missile and spacecraft guidance; electronic computers; and other types of equipment using vacuum tubes, transistors, and semiconductor circuits.

ELECTRONICS CURRICULUM

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Work, Energy, Power	3	2	4
T-ELC	101	Fundamentals of Electricity	4	6	6
			15	8	18
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	102	Physics: Properties of Matter	3	2	4
T-DFT	101	Technical Drafting	1	4	2
T-ELC	102	Fundamentals of Electricity	4	6	6
			16	12	20
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-MAT	103	Technical Mathematics	5	0	5
T-ELN	101	Electronic Instruments and Measurements	1	6	3
T-ELN	105	Control Devices	5	6	7
			14	12	18

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FOURTH QUARTER					
T-ENG	201	Oral Communications	3	0	3
T-MAT	201	Technical Mathematics	5	0	5
T-PHY	104	Physics: Light and Sound	3	2	4
T-ELN	205	Applications of Vacuum Tubes and Transistors		6	7
			5		
			16	8	19
FIFTH QUARTER					
T-ELN	210	Semiconductor Circuit Analysis	5	3	6
T-ELN	214	Wave Shaping and Pulse Circuits	2	3	3
T-ELN	---	Electronics Elective(s)	6	0	6
T-SSC	---	Social Science	3	0	3
			5		
			16	6	18
SIXTH QUARTER					
T-ELN	215	Wave Shaping and Pulse Circuits	2	3	3
T-ELN	221	Advanced Electronic Systems	5	6	7
T-ELN	---	Electronics Elective(s)	5	0	5
T-SSC	---	Social Science	3	0	3
			5		
			15	9	18
Total Hours in Required Courses					100
Minimum Hours in Electives					11
Total Hours Required					111

FURNITURE DRAFTING AND DESIGN TECHNOLOGY

North Carolina, and especially the area served by CVTI, is one of the leading centers of furniture production in the world. Thus, there is a continually increasing demand for men and women qualified as furniture draftsmen.

Furniture drafting and design technicians are concerned with the preparation of drawings required for design proposals, for samples, and for actual items in production.

Furniture draftsmen perform many duties. They develop drawings for production and assembly from pictorial drawings and written or verbal specifications of the designer. Frequently, they coordinate sample production and development of finishes; investigate new materials and methods; research design problems; assist in showroom planning and set-up; and work with sales and customer services.

Technicians with experience may often be called upon to act as product development supervisors and to contribute greatly in product design.

Furniture Drafting and Design technicians are employed by all classifications of household, institutional, office, and church furniture manufacturers, design consultants, and interior designers.



FURNITURE DRAFTING AND DESIGN CURRICULUM

COURSE TITLE			Hours Per Week		Quarter
			Class	Lab.	Hours Credit
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Properties of Matter	3	2	4
T-DFT	101	Technical Drafting	2	6	4
T-FUR	102	Furniture Processes	3	3	4
			16	11	20
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	102	Physics: Work, Energy, Power	3	2	4
T-DFT	102	Technical Drafting	2	6	4
T-FUR	103	Furniture Processes	3	3	4
			16	11	20
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-ISC	215	Product Development	3	0	3
T-DFT	105	Furniture Drafting	2	6	4
T-DES	117	Visual Design I	2	6	4
T-DES	225	Furniture Styling	2	3	3
			12	15	17
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-DFT	204	Descriptive Geometry	2	4	4
T-DFT	240	Furniture Drafting	2	6	4
T-DES	118	Visual Design II	3	3	4
T-DES	239	Rendering	2	3	3
			12	16	18
FIFTH QUARTER					
T-SSC	—	Social Science	3	0	3
T-DFT	241	Furniture Design Drafting	2	6	4
T-DES	216	Tectonic Design	3	3	4
T-DES	245	Anatomical Relationships	5	0	5
T-DFT	—	Drafting Elective(s)	3	0	3
			16	9	19

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
SIXTH QUARTER					
T-SSC	—	Social Science	3	0	3
T-DFT	242	Furniture Design Drafting	2	6	4
T-DES	250	Interior Planning and Display	3	3	4
T-DFT	—	Drafting Elective(s)	6	0	6
			14	9	17
Total Hours in Required Courses					102
Minimum Hours in Electives					9
Total Hours Required					111

FURNITURE PRODUCTION TECHNOLOGY

The furniture industry plays a major role in the economic development of North Carolina. North Carolina has experienced an 18 per cent growth during the past two years and employs more people in this industry than any other furniture producing state in the United States. The growth and development that has taken place plus the expected growth in the future indicates an ever increasing need for additional managerial, technical, skilled and semi-skilled personnel. Opportunities are virtually unlimited in this industry and many exciting careers are available on all levels for people who are properly prepared and trained to meet the industry's needs and challenges.

The furniture technology is a program designed cooperatively by industry and education. The curriculum's purpose is to provide a comprehensive understanding of the furniture industry from raw materials through the finished product. The program in its broad concept provides a foundation in both case goods and upholstery manufacturing, thus enabling the student to select a specific area to pursue upon graduation.

Program content will involve two distinct areas of study. First, the student will be exposed to manufacturing methods, techniques, and materials. Secondly, the student will pursue such courses as math, economics, supervision, human relations, technical drafting and others that will provide related competencies in the development of a furniture technician.

Students who master each phase of the furniture technology program should be well prepared to enter the furniture industry at various levels such as an assistant to supervisor, superintendent, department or division head. There are many other possibilities within the industry such as a trouble shooter, liaison between departments, shipping or transportation or expeditor. Innumerable opportunities will be available to the graduate because each company will have an individual preference as to the graduate's placement.

Having successfully completed the formal training and gained practical experience in industry, excellent advancement opportunities will prevail. The final analysis to one's success will depend on individual initiative, adaptation and application to the opportunities available.

FURNITURE PRODUCTION CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	110	Business Mathematics	5	0	5
T-PHY	101	Physics: Work, Energy, Power	3	2	4
T-FUR	101	Introduction to the Furniture Industry	3	0	3
T-DFT	101	Technical Drafting	2	6	4
			16	8	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	102	Physics: Properties of Matter	3	2	4
T-FUR	120	Lumber and its Characteristics	3	4	5
T-DFT	102	Technical Drafting	2	6	4
			16	12	21
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	103	Physics: Electricity	3	2	4
T-FUR	104	Furniture Construction Techniques	4	6	6
			15	8	18
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-SSC	—	Social Science	3	0	3
T-FUR	201	Assembly Methods and Techniques	4	6	6
T-FUR	205	Machine Room Methods and Techniques	4	6	6
			14	12	18
FIFTH QUARTER					
T-FUR	202	Finishing	4	6	6
T-FUR	220	Hardware and Trim	3	0	3
T-FUR	221	Types of Furniture	3	0	3
T-DES	225	Styling	2	3	3
T-ISC	211	Cost Analysis	3	0	3
			15	9	18
SIXTH QUARTER					
T-SSC	—	Social Science	3	0	3
T-ISC	214	Production Scheduling	4	3	5
T-ISC	221	Quality Control	4	2	5
T-FUR	247	Research Problem	2	3	3
T-FUR	—	Furniture Elective	3	3	4
			16	11	20
Total Hours in Required Courses					110
Minimum Hours in Electives					4
Total Hours Required					114



MECHANICAL DRAFTING AND DESIGN TECHNOLOGY

In making a space capsule or an electric iron, a nuclear submarine or a television set, a bridge or a typewriter, detailed plans are needed that give the exact dimensions and specifications for the entire object and each of its parts. The men and women who draw these plans are draftsmen.

Employment of draftsmen, locally and nationally, is expected to rise rapidly as a result of the increasingly complex design problem. The number needed only to replace those who retire or die is estimated at more than 10,000 annually.

Mechanical drafting technicians translate the ideas, rough sketches, specifications and calculations of engineers and designers into working plans used in making machines and all types of mechanical equipment. In addition to the basic courses in drafting, the mechanical drafting and design technology includes engineering related subjects such as hydraulics, strength of materials, and metallurgy. The connection between theory and actual practice is emphasized in labs in which the students perform experiments on industrial equipment. A special lab is provided for this purpose and is equipped with approximately \$65,000 of the most modern metallurgical and test equipment. Draftsmen may calculate the strength, reliability, and cost of materials. In their drawings and specifications, they describe exactly what materials and processes workers are to use on a particular job.

To prepare drawings, CVTI students develop skill in using such instruments as compasses, dividers, protractors, triangles, and drafting machines. They also learn to use engineering handbooks and tables to assist in solving technical problems. Graduates may also coordinate design, production, tooling, material and planning activities. With experience they may often supervise the preparation of working drawings.

Mechanical drafting technicians are employed in many types of manufacturing, fabrication, research development and service industries. Substantial numbers are also employed in communications, transportation, public utilities, consulting engineering firms, and federal, state, and local governments.

MECHANICAL DRAFTING AND DESIGN CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
T-ENG	101	Grammar	3	0	3
T-MAT	101	Technical Mathematics	5	0	5
T-PHY	101	Physics: Work, Energy, Power	3	2	4
T-DFT	101	Technical Drafting	2	6	4
T-MEC	101	Machine Processes	2	4	3
			15	12	19
SECOND QUARTER					
T-ENG	102	Composition	3	0	3
T-MAT	102	Technical Mathematics	5	0	5
T-PHY	102	Physics: Properties of Matter	3	2	4
T-DFT	102	Technical Drafting	2	6	4
T-SSC	---	Social Science	3	0	3
			16	8	19
THIRD QUARTER					
T-ENG	103	Report Writing	3	0	3
T-MAT	103	Technical Mathematics	5	0	5
T-PHY	103	Physics: Electricity	3	2	4
T-PHY	106	Applied Mechanics	5	0	5
T-DFT	103	Technical Drafting	0	6	2
			16	8	19
FOURTH QUARTER					
T-ENG	204	Oral Communication	3	0	3
T-DFT	201	Technical Drafting	2	6	4
T-DFT	204	Descriptive Geometry	2	4	4
T-MEC	205	Strength of Materials	3	2	4
T-MEC	210	Physical Metallurgy	3	3	4
			13	15	19
FIFTH QUARTER					
T-SSC	---	Social Science Elective	3	0	3
T-DFT	205	Design Drafting I	2	6	4
T-DFT	211	Mechanisms	3	2	4
T-MEC	211	Physical Metallurgy	3	3	4
T-DFT	---	Elective (Drafting or Mechanical)	3	0	3
			14	11	18
SIXTH QUARTER					
T-MEC	102	Machine Processes	2	4	3
T-DFT	206	Design Drafting II	2	6	4
T-MEC	235	Hydraulics & Pneumatics	3	3	4
T-DFT	---	Elective (Drafting or Mechanical)	3	0	3
T-DFT	---	Elective (Drafting or Mechanical)	3	0	3
			13	13	17
Total Hours in Required Courses					102
Minimum Hours in Electives					9
Total Hours Required					111

VOCATIONAL DIVISION

DIPLOMAS IN

AUTOMOTIVE MECHANICS

ELECTRICAL INSTALLATION

MACHINE SHOP

PRACTICAL NURSING

UPHOLSTERING

UPHOLSTERY CUTTING AND SEWING

AUTOMOTIVE MECHANICS

There will be many thousands of job openings for automobile mechanics during the 1965-75 decade. Deaths and retirements alone are expected to provide about 10,000 job openings each year. This need is noted locally as well as throughout the United States.

This course provides a training program for developing the basic knowledge and skills needed to inspect, diagnose, repair, or adjust automotive vehicles. Manual skills are developed in practical shop work. Thorough understanding of the operating principles involved in the modern automobile comes in class assignments, discussion, and shop practice.

CVTI automotive graduates maintain and repair mechanical, electrical, and body parts of passenger cars, trucks, and buses. They also may service tractors, marine engines, or other gasoline-powered equipment. As mechanics, they inspect and test to determine the causes of faulty operation. They repair or replace defective parts to restore the vehicle or machine to proper operating condition. They use shop manuals and other technical publications. Graduates in smaller shops usually are general mechanics qualified to perform a variety of repair jobs. A large number of automotive mechanics specialize in particular types of repair work, such as power steering and power brakes, or automatic transmissions. Usually such specialists have an all-round knowledge of automotive repair and may occasionally be called upon to do other



types of work. Some graduates may open their own shops, become service managers, sales, and/or automotive parts personnel. Thus, opportunities for advancement and above-average-salaries are open for the qualified graduate of the CVTI automotive program.

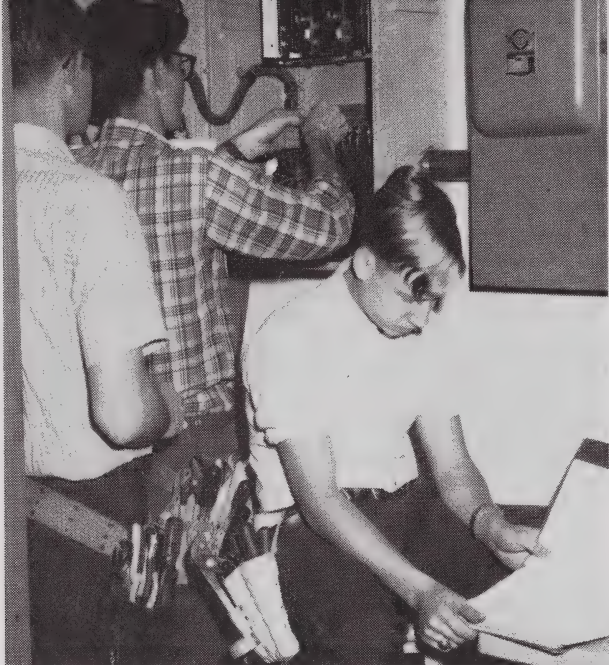
AUTOMOTIVE CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
AUT	1101	Internal Combustion Engines	3	12	7
MAT	1101	Fundamentals of Mathematics	5	0	5
ENG	1101	Reading Improvement	2	0	2
PHY	1101	Applied Science	3	2	4
			13	14	18
SECOND QUARTER					
AUT	1102	Engine Electrical and Fuel Systems	5	12	9
ENG	1102	Communication Skills	3	0	3
DFT	1101	Schematics and Diagrams: Power Mechanics	0	3	1
PHY	1102	Applied Science	3	2	4
			11	17	17
THIRD QUARTER					
AUT	1123	Automotive Chassis and Suspension Systems	3	9	6
AUT	1121	Braking Systems	3	3	4
PSY	1101	Human Relations	3	0	3
AHR	1101	Automotive Air Conditioning	2	3	3
			11	15	16
FOURTH QUARTER					
AUT	1124	Automotive Power Train Systems	3	9	6
AUT	1125	Automotive Servicing	3	9	6
BUS	1103	Small Business Operations	3	0	3
			9	18	15
Total Credit Hours Required					66

ELECTRICAL INSTALLATION AND MAINTENANCE

The rapid expansion of the national economy and the increasing development of new electrical products is providing a growing need for qualified people to install and maintain electrical equipment. By mid-1960 more than 350,000 were employed as either construction electricians or maintenance electricians. Between 5,000 and 10,000 additional tradesmen are required each year just to replace those leaving the industry. It is expected that the total requirements for electrical tradesmen will reach 700,000 by 1970. The shortage of electricians is certainly noted in this local area also. Qualified licensed electricians are among the highest paid construction workers in the United States.

This course will provide a training program in the basic knowledge, fundamentals, and practices involved in the electrical trades. A large portion of



the program is devoted to laboratory and shop instruction which is designed to give the student practical knowledge and application experience in the fundamentals taught in class.

The graduate of the Electrical Installation and Maintenance Program will be qualified to enter the electrical trades where he will assist in the planning, lay-out, installation, check-out, and maintenance of systems in residential, commercial, or industrial plants. He will have an understanding of the fundamentals of the National Electrical Code regulations as related to wiring installations, electrical circuits, and the measurements of voltage, current, power, and power factor of single and polyphase alternating circuits. He will have a basic knowledge of motor and motor control systems; industrial electronic control systems; business procedures, organization, and practices; communicative skills; and the necessary background to be able to advance through experience and additional training. Following actual experience, the CVTI electrical installation and maintenance graduate after apprenticeship will be eligible to take the North Carolina State Electrical License examination.

ELECTRICAL CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ELC	1112	Direct and Alternating Current	5	12	9
ENG	1101	Reading Improvement	2	0	2
MAT	1115	Electrical Mathematics I	5	0	5
PHY	1101	Applied Science	3	2	4
			15	14	20

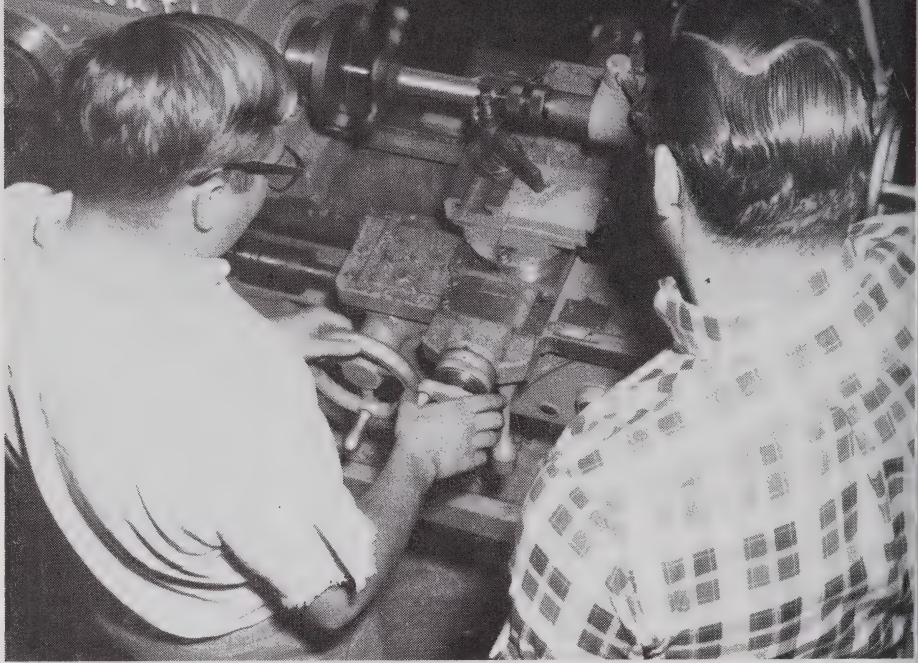
COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
SECOND QUARTER					
ELC	1113	Alternating Current and Direct Current Machines and Controls	5	12	9
ENG	1102	Communication Skills	3	0	3
PHY	1102	Applied Science	3	2	4
MAT	1116	Electrical Mathematics II	5	0	5
			<hr/>	<hr/>	<hr/>
			16	14	21
THIRD QUARTER					
ELC	1124	Residential Wiring	5	9	8
ELN	1118	Industrial Electronics	3	6	5
PSY	1101	Human Relations	3	0	3
DFT	1113	Blueprint Reading: Electrical	1	3	2
			<hr/>	<hr/>	<hr/>
			12	18	18
FOURTH QUARTER					
ELC	1125	Commercial and Industrial Wiring	5	12	9
ELN	1119	Industrial Electronics	3	6	5
BUS	1103	Small Business Operations	3	0	3
			<hr/>	<hr/>	<hr/>
			11	18	17
			Total Credit Hours Required 76		

MACHINE SHOP

Surveys recently completed in North Carolina and locally show that many of the existing industries lack the time and facilities for training enough machinists to meet present and planned needs. Expanding industries already located in our State and new industries under development invariably express the need for skilled machinists who have the background, knowledge, and potential to advance.

This course is designed to give students the opportunity to acquire basic knowledge, skills, and related technical information necessary to gain employment in the machine shop industry. Students will develop skill in bench work, layout, drilling, lathe work, milling, shaping, planing, broaching, and grinding. Operating principles of machine tools, use of measuring and testing instruments, math and blueprint reading are also covered. Through actual shop experience, class assignments, discussion, demonstrations, and experiments, the students become industrially qualified.

The qualified graduate is a skilled metal worker who shapes metal parts by using machine tools and hand tools. His training and experience enable him to plan and carry through all the operations needed in turning out a machined product and to switch readily from one kind of product to another. He will be able to select the proper tools and material required for each job and to plan the cutting and finishing operations in their proper order so that he can complete the finished work according to blueprint or written specifications. He makes standard shop computations relating to dimensions



of work, tooling, feeds, and speeds of machining. Through the use of instruments such as micrometers and gages, he works to thousands of an inch.

CVTI graduates can not only expect above-average-wages, but also advancement opportunities to positions such as set up men, foremen, and tool and die makers.

MACHINE SHOP CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
MEC	1101	Machine Shop Theory & Practice	3	12	7
MAT	1101	Fundamentals of Mathematics	5	0	5
DFT	1104	Blueprint Reading: Mechanical	0	3	1
ENG	1101	Reading Improvement	2	0	2
PHY	1101	Applied Science	3	2	4
			13	17	19
SECOND QUARTER					
MEC	1102	Machine Shop Theory & Practice	3	12	7
MAT	1103	Geometry	3	0	3
DFT	1105	Blueprint Reading: Mechanical	0	3	1
PHY	1102	Applied Science	3	2	4
ENG	1102	Communication Skills	3	0	3
			12	17	18
THIRD QUARTER					
MEC	1103	Machine Shop Theory & Practice	3	12	7
MEC	1115	Treatment of Ferrous Metals	2	3	3
DFT	1106	Blueprint Reading: Mechanical	0	3	1
MAT	1104	Trigonometry	3	0	3
PSY	1101	Human Relations	3	0	3
			11	18	17

COURSE TITLE**Hours
Per Week
Class Lab.****Quarter
Hours
Credit****FOURTH QUARTER**

MEC	1104	Machine Shop Theory & Practice	3	12	7
MEC	1116	Treatment of Non-Ferrous Metals	2	3	3
MAT	1123	Machinist Mathematics	3	0	3
BUS	1105	Industrial Organizations	3	0	3
			<hr/>	<hr/>	<hr/>
			11	15	16
			Total Credit Hours Required 70		

PRACTICAL NURSING

The accelerated growth of population in North Carolina and rapid advancement in medical technology demand a tremendously increased number of well-trained, capable personnel for health service positions. CVTI, in conjunction with the new Catawba Memorial Hospital, Newton, and the Iredell Memorial Hospital, Statesville, offers the LPN program to meet local needs for such personnel. Classes will be held at the Institute while actual experience will be obtained at one of the hospitals. The graduate is eligible to take and must pass the N. C. Board of Nursing LPN examination to obtain her license.

The LPN is qualified and prepared to function in a variety of situations: hospitals of all types, nursing homes, clinics, doctors' and dentists' offices and, in some localities, public health facilities. In all situations, the LPN functions under the supervision of a registered nurse and/or licensed physician.

Job requirements for the Licensed Practical Nurse include suitable personal characteristics, ability to adapt knowledge and understanding of nursing principles to a variety of situations, technical skills for performance of bedside nursing, appreciation for differences of people and for the worth of every individual, a desire to serve and help others, and readiness to conform to the requirements of nursing ethics and hospital policies.



PRACTICAL NURSING CURRICULUM

COURSE TITLE			Hours Per Week	Clinical Area	Quarter Hours Credit	
		Class	Lab.			
FIRST QUARTER						
PNE	1101	Fundamentals of Nursing	9	4	3	12
PNE	1102	Anatomy and Physiology	5	0	0	5
PNE	1103	Nutrition	2	0	0	2
PNE	1104	Growth and Development	2	0	0	2
PSY	1101	Human Relations	2	0	0	2
PNE	1105	Vocational Adjustments I	1	0	0	1
ENG	1101	Reading Improvement	2	0	0	2
			23	4	3	26
SECOND QUARTER						
PNE	1106	Medical—Surgical I	4	2	0	5
PNE	1107	Maternity Nursing I	2	0	0	2
PNE	1108	Pediatric Nursing I	3	0	0	3
PNE	1109	Clinical Experience I (Medical, Surgical, Obstetrical or Pediatric)	0	0	21	7
ENG	1102	Communication Skills	3	0	0	3
			12	2	21	20
THIRD QUARTER						
PNE	1110	Medical—Surgical II	5	0	0	5
PNE	1111	Maternity Nursing II	2	2	0	3
PNE	1112	Pediatrics II	2	0	0	2
PNE	1113	Pharmacology	1	0	0	1
PNE	1114	Clinical Experience II (Medical, Surgical, or Pediatric)	0	0	24	8
			10	2	24	19
FOURTH QUARTER						
PNE	1115	Medical—Surgical Nursing III	11	0	0	11
PNE	1116	Vocational Adjustments II	2	0	0	2
PNE	1117	Clinical Experience III (Medical, Surgical, Pediatric or Obstetrical)	0	0	24	8
			13	0	24	21
Total Credit Hours Required					86	

UPHOLSTERING

Upholstering is among the most skilled and among the better paying occupations in the furniture industry. This course covers various styles and types of furniture. The primary emphasis is upon actual practical experience in the construction, springing up, covering, and trimming of upholstered chairs and sofas. Emphasis throughout is placed upon quality and the development of production speed.

Full-time students may complete the upholstering course in 1½ quarters and part-time students in 3 quarters.

The student will learn and/or develop skill in the following areas:

- I. History and styling of furniture
- II. Tools and equipment
- III. Spitting tacks—hammer technique
- IV. Stapling—staple gun techniques
- V. Springing up
- VI. Arranging and securing filler and padding

- A. Sewing large stitches across surface of fabric; covering of springs and working filler under stitches to form holding base
- B. Spreading more filler over surface and placing cover filler, sewing it to bottom fabric
- C. Placing additional filler on top of cover and covering padded sections with unbleached muslin, tacking muslin to frame
- D. Arranging layer of cotton wadding over muslin cover for smoother finish

VII. Covers

VIII. Covering padded frame with upholstery fabric

- A. Selecting previously cut fabric, partially stitched, and aligning and smoothing it in place over cotton wadding
- B. Tacking cover to form in key spots to hold it temporarily
- C. Sewing sections of cover which have been left unstitched with invisible lockstitches
- D. Strengthening and tacking edges of cover tightly and evenly to frame
- E. Untacking covering in places and inserting regulator to smooth out lumpy padding, then permanently tacking
- F. Trimming covering around legs and uprights to make a neat fit

IX. Making and typing buttons

X. Tufting and buttoning

UPHOLSTERY CUTTING AND SEWING

Furniture manufacturing, one of the two largest industries in this area, affords women excellent employment opportunities, especially as upholstery cutters and sewing machine operators. Many men also find this course a valuable asset in operating their own businesses or seeking advancement to supervisory positions.

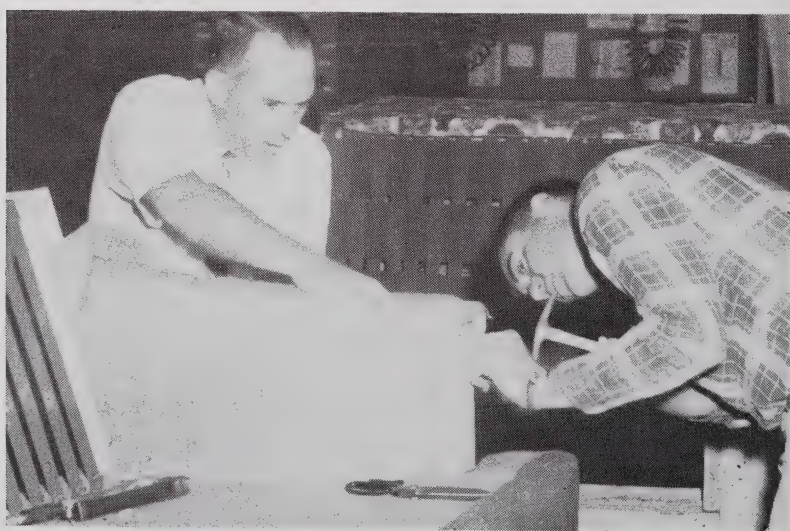
In this program, the student learns to develop patterns, cut upholstery material, as well as to adjust and operate the sewing machine to sew the material for proper fitting and matching of fabrics. Not only are fundamental sewing operations learned, but quality and production speed emphasized.

The course may be completed in one quarter on a full-time basis or two quarters part-time.

The student will learn:

- I. Basic cutting techniques
 - A. How to measure a frame
 - B. How to develop a pattern

- C. How to match and mark fabrics
- D. How to properly use tools to cut the material
- II. Basic knowledge of the sewing machine
 - A. How to thread a machine
 - B. How to and when to change stitches
 - C. How to change needles
 - D. How and when to adjust tension
- III. Understanding pieces to be sewn
 - A. Understanding cutter's marks
 - B. Where and why to sew pulls
 - C. Where and why to sew welts
 - D. How to sew welts
 - E. How to French seam (top stitch)
 - F. How to match stripes
- IV. Sewing the loose cushion
 - A. Learning the importance of exact seaming
 - B. How to apply boxing to face of cushion to sew
 - C. How to join boxing
 - D. How to match stripes on boxing and face
 - E. How to finish cushion
- V. Sewing skirts and flounces
 - A. Learning to sew box-pleat skirt
 - B. Learning to line box-pleat skirt
 - C. Learning to sew flounces



ADULT CONTINUING EDUCATION DIVISION

PROGRAMS IN

EVENING CREDIT: BUSINESS,
TECHNICAL, VOCATIONAL
EVENING NON-CREDIT: BUSINESS,
TECHNICAL, VOCATIONAL
APPRENTICESHIP

SUPERVISORY DEVELOPMENT TRAINING
SPECIAL INDUSTRIAL PROGRAMS
BASIC ADULT EDUCATION
ADULT HIGH SCHOOL DIPLOMA
CULTURAL DEVELOPMENT COURSES

GENERAL INFORMATION

The Adult Continuing Education Program of Catawba Valley Technical Institute is designed to meet the educational and self-fulfillment needs of adults living in the Catawba Valley Area. The Adult Program includes a diversity of class offerings that range from the simplest elementary instruction in reading and writing through advanced enrichment courses that mature adults require as they meet their daily problems as citizens, as homemakers, as wage earners, and as individuals in society. The Adult Continuing Education programs are designed to improve skills and knowledge and also to offer cultural enrichment and enlightened citizenship. Not only are courses offered at the Institute, but for groups in their own community as well. Because of the flexibility of CVTI's organization and its variety of courses, individuals of post-high school age, irrespective of their



background, training, and experience, are welcomed and encouraged to participate in adult continuing education classes.

Additional information concerning any program in this section may be obtained by contacting Catawba Valley Technical Institute, Hickory.

ADMISSION. Any adult living in the Catawba Valley area or counties surrounding CVTI is eligible to enroll in Adult Continuing Education classes. Adult, as used here, means one who is over eighteen years of age and is considered a part of the out-of-school population.

There are no formal educational requirements for admission in the majority of the Adult Continuing Education classes, with the exception of evening credit courses.

SCHEDULING OF CLASSES. Classes are normally scheduled on a quarterly basis with new classes beginning each September, December, March, and June. Specific announcements of course offerings and registration dates and places will be made through the local news media and by other suitable means, approximately three weeks before the beginning of each quarter. Adults interested in attending any of the courses may pre-register by mail, by telephone, or by visiting the Institute. Applicants are accepted on a "first come, first served" basis. If a class is filled, a waiting list will be maintained. The individual will then be notified when the course is next offered.

Ordinarily, a course may be offered when a minimum of fifteen persons enroll for the course. CVTI reserves the right to cancel any course where a sufficient number of people fail to register. Late registration will be permitted until the class meets the second week.

New classes, away from the campus, may be established whenever a sufficient number of students in a given community show interest in having classes taught in their community.

The majority of classes are offered one or two evenings each week between the hours of 6:00 p.m. and 10:00 p.m., Monday through Thursday. Whenever possible all classes will begin at the same time during a given quarter.

ATTENDANCE. Adults are expected to attend class regularly. Individual attendance records are maintained and permanently retained. In the Adult Continuing Education classes students must be present at least eighty (80) per cent of the class sessions to get credit for the course.

TUITION AND FEES. No tuition or fees are charged for non-credit adult continuing education classes. The majority of all CVTI adult classes

are offered to the general public free of charge. Candidates for the Adult High School Diploma, however, are charged a testing fee of \$2.00 which allows each student to take a battery of four beginning-of-course tests and four end-of-course tests. Except in the Adult Elementary classes, the student will purchase his own books and personal supplies where required. Such books and supplies are available through the Institute bookstore. When classes meet outside CVTI, the Institute bookstore makes it possible for books to be purchased at the class location.

CERTIFICATES. Certificates are given for the satisfactory completion of non-credit adult classes.

FACULTY. In the Adult Continuing Education classes as in all other CVTI training, quality instruction is primary. Thus, the best qualified instructors available are sought and utilized. On the elementary and high school levels all instructors are certified to teach such classes. Consideration of educational background, training, practical experience, skills, and interest help assure the use of qualified instructors in all subject areas.

LEARNING LABORATORY

Through the Learning Laboratory programmed instructional materials are available in more than forty subjects. Included are numerous business, data processing, English, foreign language, psychology, reading, mathematics, science, electronics, and social study courses.

Among recent educational innovations, programmed courses allow the student to study at his own rate of speed. He studies by himself rather than in the normal classroom situation.

The student may adjust study time in the Learning Laboratory to meet his own convenience and schedules. One sets his own study sessions and



attends as many days and hours per week as he can attend. Enrollees may begin courses at any time during the quarter and may undertake as many subjects as desired.

The Learning Laboratory Coordinator helps the student (1) locate the level of instruction at which the student can learn by himself; (2) formulate the sequence of courses to be taken; and (3) assure himself that he is making satisfactory progress.

Students may enroll for numerous reasons—to prepare for high school equivalency examinations; to make up admissions deficiencies for Technical Institutes and colleges; to reduce specific educational weaknesses; to upgrade themselves for job promotion; to reinforce other courses of study; or simply for personal satisfaction.

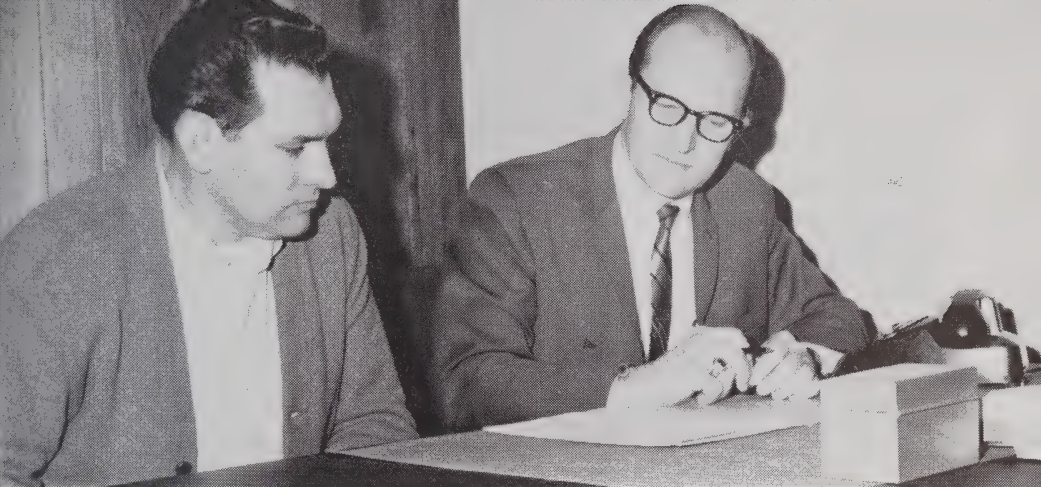
There are no admissions requirements or fees for study in the Learning Laboratory.

EVENING CREDIT: BUSINESS, TECHNICAL, AND VOCATIONAL COURSES

In the Fall Quarter, 1967, CVTI began offering curriculum credit courses during the evening hours. Courses satisfactorily completed in the business and technical curricula will earn credit toward the Associate in Applied Science Degree. Courses satisfactorily completed in the trade curricula will earn credit toward a diploma in the vocational area of training.

The following guidelines will be followed pertaining to these courses:

1. Any courses advertised in the catalog may be offered if sufficient demand exists and suitable arrangements can be made.
2. Courses will follow the course number and description as outlined in the catalog.
3. The number of hours a course meets per week may be altered for the convenience of CVTI and the students. However, the specified contact hours must be met before credit is given.
4. All instructors used for credit courses will meet the same qualifications as day instructors.
5. Grades, reports, attendance regulations, and classroom activities will follow the procedures as outlined in the catalog.
6. Tuition will be charged at the rate of \$2.50 per credit hour with a quarterly maximum of \$32.00.



7. The admission procedures will be the same as for day courses except for the fact that a student may take a maximum of 18 credit hours within a program before officially being accepted in that program.

A list of curriculum credit courses is included in the schedule of evening classes published at least three weeks prior to the beginning of each quarter.

EVENING NON-CREDIT: BUSINESS, TECHNICAL, AND VOCATIONAL COURSES

Non-credit vocational, technical, and business evening courses are designed to serve adults who are employed or are seeking employment at the skilled, technical and sub-professional levels. Any adult 18 years of age or older who needs training or re-training or who otherwise profits from the proposed courses may be enrolled. Students who are employed normally attend training during their non-working hours to increase their skills and understandings; to improve their competency; and to qualify for advancement.

Examples of non-credit upgrading courses include: Practical Hydraulics, FCC License Preparation, Small Gasoline Engine Servicing, Alternator Servicing, Basic Electricity, Speed Reading, Stenoscript, Plant Propagation, Farm Records and Income Taxes, Slide Rule, and National Electric Code.

APPRENTICESHIP COURSES

Catawba Valley Technical Institute offers related classroom training for Bricklaying, Carpentry, and Plumbing apprentices. These courses, co-sponsored by CVTI and the local apprenticeship committees, are scheduled to meet the requirements of the apprenticeship training programs.

SUPERVISORY DEVELOPMENT TRAINING

As one answer to business, industry, and government needs for better supervisors, CVTI offers the Supervisory Development Training Program.

SDT is an extension service with classes held on campus and in local industrial plants. The program offers to both small and large organizations a valuable source of in-service and up-grading instruction in the principles of supervision.

The SDT program consists of more than twenty short courses from which one may select and plan an appropriate training program. Examples of SDT courses include: Principles of Supervision, Human Relations, Effective Communications, Work Measurement, Job Methods, Creative Thinking, and Industrial Safety and Accident Prevention.

SPECIAL INDUSTRIAL PROGRAMS

The function of the CVTI Extension Program is to offer industry and other interested groups and/or individuals an opportunity to obtain classes held on premises away from the Institute.

Classes may be in the immediate area in which the industry is engaged. The purpose of the course may be that of pre-employment training, on-the-job training, or the upgrading of the skills of present employees.

In addition, special classes may be developed for specific job training of personnel for a New Industry coming into the area.

Because of the flexibility of the programs, courses are tailored to specific group needs. New programs are initiated as the need is indicated by surveys, interviews and sufficient enrollment in individual classes. Classes are scheduled at the time and place convenient to the interested group or individual initiating the class inquiry.

There is no charge to the student or the businesses for such courses. The potential class, however, must have a minimum of ten students.

For assistance in developing extension classes, inquiries and requests are welcomed by the CVTI Director of Adult Education Programs.

BASIC ADULT EDUCATION

Adult Elementary (Basic) Education is a program designed to assist adults who wish to improve their skills in oral and written communication or for adults who wish to learn to read and write. Elementary studies include reading, writing, spelling, arithmetic, social studies, health, listening and talking, and homemaker education.

All materials used have been especially prepared with emphasis on individual needs and interests. Classes meet twice a week, three hours per session, in the local communities where there is a sufficient number of



interested adults. Classes have been organized in Catawba, Alexander, and Iredell counties in order that adults may enroll in classes near their home.

Adult elementary classes are organized in two groups: Group I, grades one through four; and Group II, grades five through eight. Every adult is tested to determine whether he will be placed in Group I or Group II.

In Group I the basic fundamentals of reading, writing, and arithmetic are stressed. Some basic science and social studies are introduced at this level. The course of study is designed to bring adults to a functional level whereby individual study is possible.

Group II is a continuation of the first level with more individual study and a greater scope of subject matter including science and social studies. More emphasis is also placed on English and math. With the completion of Group II, the adult should be equipped to enroll in the Adult High School Diploma Program.

ELEMENTARY CLASS LOCATIONS. In Catawba County classes meet at High School, St. Stephens Elementary School, E. L. Davis Home, Banoak School, Rhoneys School, Ridgeview School, Maiden Rosenwald School, and Catawba Rosenwald School.

In Alexander County classes meet at Ellendale School, Taylorsville High School, and Alexander County Prison Camp.

Iredell County classes meet at Statesville High School and the Iredell County Prison Camp.

ADULT HIGH SCHOOL DIPLOMA COURSES

The Adult High School Diploma Program is designed to give mature adults who have less than a twelfth grade education another opportunity to earn a high school diploma. The primary purposes of this program are

to improve reading skills, to strengthen weaknesses in the educational background, and assure a minimum of knowledge in English, mathematics, science, and social studies.

CVTI sponsored high school classes do not operate on a unit system. To be eligible for the Adult High School Diploma, each student must demonstrate satisfactory proficiency in the four subject areas. Proficiency is shown by meeting required scores on English, Mathematics, Science, and Social Studies selected standardized achievement tests. These tests are described below.

CLASS LOCATIONS AND SCHEDULE. Adult High School classes are offered at Catawba Valley Technical Institute, Taylorsville High School and Statesville Senior High School. At CVTI classes meet two hours per night on Monday and Wednesday nights between 6:00 p.m. and 10:00 p.m. At Taylorsville High and Statesville High Schools, classes are scheduled on Monday and Thursday nights between 6:00 p.m. and 10:00 p.m.

TESTING. Adults seeking the Adult High School Diploma are required to take standardized achievement tests in English, Math, Social Studies, and Science. Adult students are placed in the learning environment according to the results of the preliminary testing. Tests are given at the beginning and end of courses in each of the four subject areas mentioned above. Students making satisfactory scores on the beginning-of-course tests will not be required to complete classes. If all four tests are passed, the candidate will be recommended to the cooperating Board of Education to receive the Adult Diploma.

Candidates who fail to make satisfactory scores on beginning-of-course tests must satisfactorily complete the course in that subject area. At the end of the course, the student may again take the test. When, in this manner, the adult student makes a satisfactory score in the four areas of study, he is recommended for the Adult Diploma.



End-of-course tests are given at the center where the adult student takes classes. Beginning-of-course tests are given only at CVTI once a quarter and are announced through news media.

CLASS LOAD. No adult may enroll for more than two high school courses during an eleven-week quarter. Students meet classes for forty-four hours during each eleven weeks. Each class meets twice weekly and two hours per meeting.

FEES. Candidates for the Adult High School Diploma are charged a testing fee of \$2.00 and must purchase books for any course taken. No other fees or charges are made. Testing fees are payable in advance at the Institute.

DIPLOMAS. The Catawba County Board of Education, the Alexander County Board of Education, and the Statesville City Board of Education are cooperating with CVTI in the earned Adult High School Diploma Program. All High School Diplomas are issued by one of the cooperating boards of education.

CULTURAL DEVELOPMENT CLASSES

To complete the total adult education program at CVTI, numerous enrichment and culture classes are offered. Non-credit classes are available in conversational foreign languages, public speaking, reading improvement, economics, sociology, civics, civil defense, current affairs, government, problems of democracy, history, education for parenthood, home economics, sewing, physical fitness for women and men, flower arranging, leadership training, consumer education, family finance, creative arts, investments, home decoration, and family life.

To fulfill the need for avocational courses, CVTI offers classes in creative writing, writing for publication, art, ceramics, leathercraft, lapidary art, ham radio techniques, photography, and welding.

The majority of adult non-credit courses are evening classes. An occasional class, however, is held in the morning or afternoon for the convenience of an interested group of adults.

COURSE DESCRIPTIONS

AGRICULTURAL, BUSINESS, ENGINEERING, VOCATIONAL DIVISIONS

AGRICULTURE

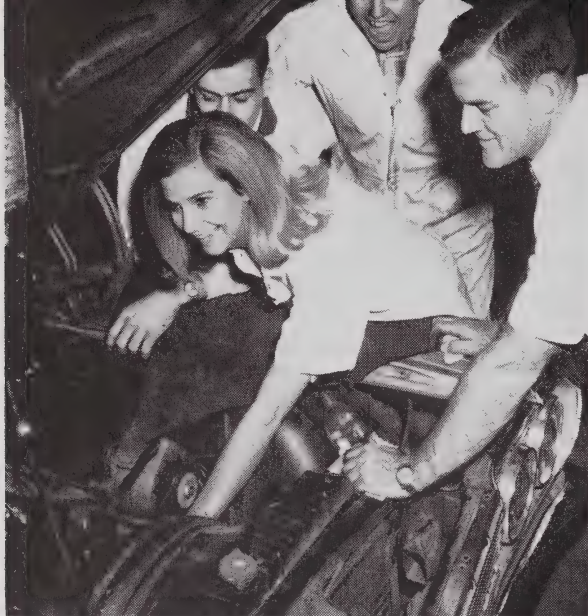
	Class	Lab.	Credit
T-AGR 104 Introduction to Agricultural Economics	3	2	4
An introduction to economics, the functions of the economic system and agriculture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main sources of changes which affect agricultural firms. Prerequisite: None.			
T-AGR 125 Animal Science	5	2	6
An introductory animal science course covering the fundamental principles of livestock production. A study of the animal body and the basic principles of reproduction, genetics, growth, fattening, digestion, along with the selection, feeding, improvement, processing and marketing of livestock. Prerequisite: None.			
T-AGR 127 Animal Nutrition	5	2	6
A course dealing with the principles of nutrition and their application to feeding practices of cattle, horse, sheep and swine production in North Carolina. Prerequisite: T-AGR 125.			
T-AGR 150 General Horticulture	3	2	4
A course dealing with horticulture principles and the application of plant science fundamentals to horticultural practices. Prerequisite: None.			
T-AGR 151 Plant Materials, Identification, and Use I	2	4	4
Identification, adaptation and use of ornamental plants. Prerequisite: T-AGR 170.			
T-AGR 152 Plant Propagation	2	3	3
A course dealing with the fundamental principles involved in plant propagation, with emphasis in the practical knowledge of useful techniques for propagating plants. Prerequisite: T-AGR 150.			
T-AGR 153 Plant Materials, Identification, and Use II	2	2	3
A course primarily designed to study the woody plants grown in nurseries for landscape purposes, but will also include those found in woodlands and fields in North Carolina. Identification, culture and uses of selected evergreens and deciduous shrubs will be covered. Prerequisite: T-AGR 170.			
T-AGR 154 Ornamental Plant Protection	3	4	5
A review of the basic principles of entomology and plant pathology. Emphasis on the identification and practical methods of control of pests that attack ornamental plants; insects, diseases, weeds and rodents. Prerequisite: T-AGR 170.			
T-AGR 155 Floriculture	3	2	4
Culture and use of commercial flowering plants. Emphasis on flowering pot plants but includes foliage plants, bulbs, and house plants of the florist business. Principles of floral design. Prerequisite: T-AGR 170.			



	Class	Lab.	Credit
T-AGR 170 Plant Science	5	2	6
An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions, and development of seed bearing plants with application to certain commercially important plants in North Carolina. Prerequisite: None.			
T-AGR 180 General Poultry Science	3	2	4
An introduction to the science of poultry production. The major phases of the study include the history of the poultry industry; the anatomy and physiology of the chicken; the breeds and varieties; the breeding principles; the principles of incubation, brooding, rearing, feeding, housing and management; marketing poultry products; and the science of disease and parasite prevention and control. Prerequisite: None.			
T-AGR 185 Soil Science and Fertilizers	5	2	6
A course dealing with basic principles of efficient classification, evaluation, and management of soils; care, cultivation, and fertilization of the soil, and conservation of soil fertility. Prerequisite: None.			
T-AGR 187 Fertilizers and Lime	3	2	4
A review of the source, function, and the use of the major and minor plant food elements; commercial fertilizer ingredients; soil acidity, liming materials; application of fertilizer and liming materials. Prerequisite: None.			
T-AGR 201 Agricultural Chemicals	5	2	6
A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control. Prerequisite: None.			
T-AGR 204 Farm Business Management	5	2	6
A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review			

	Class	Lab.	Credit
of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most net revenue. Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager. Prerequisite: T-AGR 104.			
T-AGR 205 Agricultural Marketing	5	2	6
An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco. Prerequisite: T-AGR 104.			
T-AGR 206 Agricultural Finance	3	0	3
Analysis of the capital structure of modern commercial agriculture with emphasis on the sources of credit. A review of lending institutions, repayment schedules, and credit instruments. Practice in the procedure of evaluating farm resources with attention to information needed for resource valuation, appraisal forms and procedures, discounting and depreciation. Prerequisite: None.			
T-AGR 209 Agricultural Prices	3	0	3
An introduction to the functions of prices in our economic system and the effects of changing price levels. The influence consumer demand has on prices through price and income elasticities. A review of the influences of cycles and timing of production along with an examination of the use of future commodity contracts. Application of the principles of price analysis to price control and parity programs. Familiarization with the various tools widely used in historical analysis and forecasting. Prerequisite: T-AGR 104.			
T-AGR 218 Agricultural Mechanization	3	2	4
A study of farm machinery management and labor-saving devices. The economics of selection and operation of farm machinery. Study and evaluation of feed grinders, and mixers, storage facilities, materials handling systems and other labor-saving devices. Prerequisite: None.			
T-AGR 222 Farm Electrification	3	2	4
A study of the basic principles and systems, and their application to agricultural production with emphasis on equipment for controlling the utilization of electricity. Prerequisite: None.			
T-AGR 225 Dairy and Beef Production	5	2	6
A study of the principles of selection, breeding, feeding, care and management of dairy and beef cattle. Prerequisite: T-AGR 125.			
T-AGR 226 Swine Production	3	2	4
Development of the swine production and marketing industries; principles and practices of selection, breeding, feeding, housing, marketing and management of swine. Prerequisite: T-AGR 125.			
T-AGR 228 Livestock Diseases and Parasites	3	2	4
A course dealing with the common diseases and parasites of livestock; sanitation prac-			

	Class	Lab.	Credit
tices and procedures with emphasis on the cause, damage, symptoms, prevention and treatment of parasites and diseases, and management factors relating to disease and parasite prevention and control. Prerequisite: T-AGR 125.			
T-AGR 250 Fruit and Vegetable Production	3	2	4
A course dealing with the fruit and vegetable production. A study of the importance and principles of production and marketing of the major vegetable crops. Identification and methods of production and marketing of the principal tree and small fruits. Prerequisite: T-AGR 170.			
T-AGR 251 Landscape Design	2	4	4
The principles and practices of landscape design with application to selected landscape problems. On-the-job sketching and plan presentation as done by the nurseries. Planning of small home grounds as well as problems of design and construction dealing with grading, walls, steps, and other garden accessories. Prerequisite: T-AGR 151.			
T-AGR 252 Landscape Gardening	3	2	4
Maintenance of landscape areas including planting, pruning, fertilization and pest control. Landscape economics: costs, contracts, calculating areas, volumes, and plant quantities for landscape projects. Selection and use of materials in landscape construction. Prerequisite: T-AGR 151.			
T-AGR 254 Greenhouse Management	3	2	4
Fundamentals of and practices in greenhouse plant production. Prerequisite: T-AGR 170.			
T-AGR 255 Arboriculture	3	2	4
Principles and practices of selection, use establishment and care of shade and ornamental trees. Prerequisite: T-AGR 151.			
T-AGR 257 Nursery Management	3	2	4
Retail and wholesale nursery practices. Layouts, selling, handling of plant materials. Commercial nursery stock production dealing with plant growth patterns and plant responses in relation to soils, water, fertility, planting techniques and distances, top and root pruning. Plant production cycles, rotations, and kind of treatment for economy production. Prerequisite: T-AGR 151.			
T-AGR 258 Turf Management	2	2	3
A study of turf grasses including identification, seeding establishment, use and maintenance. Prerequisites: T-AGR 170; T-AGR 185.			
T-AGR 272 Tobacco Technology	3	2	4
A review of the economic importance of tobacco in North Carolina and a detailed study of all aspects of the production and marketing of tobacco with a brief look at the processing and manufacturing phases. Prerequisite: T-AGR 170.			
T-AGR 273 Grain Production and Marketing	3	0	3
A course covering the various phases of grain-crop production and marketing with emphasis on those of economical importance to North Carolina. Prerequisite: T-AGR 170.			
T-AGR 296 Agricultural Programs and Agencies	3	2	4
A review of the public agriculture programs and agencies that provide services for agricultural producers. The objectives, organization, functions and services of these organizations. Prerequisite: None.			



AIR CONDITIONING

	Class	Lab.	Credit
AHR 1101 Automotive Air Conditioning	2	3	3
General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system. Prerequisites: PHY 1101, PHY 1102.			

AUTOMOTIVE

AUT 1101 Internal Combustion Engine	3	12	7
Development of a thorough knowledge and ability in using, maintaining, and storing the various hand tools and measuring devices needed in engine repair work. Study of the construction and operation of components of internal combustion engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing. Prerequisite: None.			
AUT 1102 Engine Electrical and Fuel Systems	5	12	9
A thorough study of the electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment of the fuel and electrical system. Prerequisite: None.			
AUT 1121 Braking Systems	3	3	4
A complete study of various braking systems employed on automobiles and light weight trucks. Emphasis is placed on how they operate, proper adjustment, and repair. Prerequisite: PHY 1102.			
AUT 1123 Automotive Chassis and Suspension Systems	3	9	6
Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of suspension, and steering systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, and front end and alignment. Prerequisite: None.			

	Class	Lab.	Credit
AUT 1124 Automotive Power Train Systems	3	9	6
Principles and functions of automotive power train systems: clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair. Prerequisites: PHY 1101, PHY 1102.			
AUT 1125 Automotive Servicing	3	9	6
Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Troubleshooting of automotive systems, providing a full range of experiences in testing, adjusting, repairing and replacing. Prerequisites: AUT 1123, AUT 1121, AHR 1101, AUT 1101, AUT 1102.			
AUT 1145 Chassis and Suspension Systems	3	9	6
The principles involved in frame design, types of suspension, load weight distribution, types of steering, wheel alignment, and wheel balance are studied. The laboratory offers instruction in disassembly, inspection, reassembly, and adjustment of the components of frame and suspension systems. Prerequisite: None.			

BUSINESS

T-BUS 101 Introduction to Business	5	0	5
A survey of the business world with particular attention devoted to the structure of the various types of business organization, methods of financing, internal organization, and management. Prerequisite: None.			
T-BUS 102 Typewriting	2	3	3
Introduction to the touch typewriting system with emphasis on correct techniques, mastery of the keyboard, simple business correspondence, tabulation, and manuscripts. Prerequisite: None.			
T-BUS 103 Typewriting	2	3	3
Instruction emphasizes the development of speed and accuracy with further mastery of correct typewriting techniques. These skills and techniques are applied in tabulation, manuscript, correspondence, and business forms. Prerequisite: T-BUS 102 or equivalent. Speed requirement, 30 words per minute for five minutes.			
T-BUS 104 Typewriting	2	3	3
Emphasis is on production typing problems and speed building. Attention to the development of the student's ability to function as an expert typist, producing mailable copies. The production units are tabulation, manuscript, correspondence, and business forms. Prerequisites: T-BUS 103 or the equivalent. Speed requirement, 40 words per minute for five minutes.			
T-BUS 106 Shorthand	3	2	3
A beginning course in the theory and practice of reading and writing shorthand. Emphasis on phonetics, penmanship, word families, brief forms, and phrases. Prerequisite: None.			
T-BUS 107 Shorthand	3	2	4
Continued study of theory with greater emphasis on dictation and elementary transcription. Prerequisite: T-BUS 106 or the equivalent.			

	Class	Lab.	Credit
T-BUS 108 Shorthand	3	2	4
Theory and speed building. Introduction to office style dictation. Emphasis on development of speed in dictation and accuracy in transcription. Prerequisite: T-BUS 107.			
T-BUS 110 Office Machines	2	2	3
A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the ten-key adding machines, full keyboard adding machines, and calculator. Prerequisite: None.			
T-BUS 112 Filing	3	0	3
Fundamentals of indexing and filing combining theory and practice by the use of miniature letters, filing boxes, and guides. Alphabetic, Triple Check, Automatic, Geographic, Subject, Soundex, and Dewey Decimal filing. Prerequisite: None.			
T-BUS 115 Business Law	3	0	3
A general course designed to acquaint the student with certain fundamentals and principles of business law, including contracts, negotiable instruments, and agencies. Prerequisite: None.			
T-BUS 116 Business Law	3	0	3
Includes the study of laws pertaining to bailments, sales, risk-bearing, partnership—corporation, mortgages, and property rights. Prerequisite: T-BUS 115.			
T-BUS 120 Accounting	5	2	6
Principles, techniques and tools of accounting, for understanding of the mechanics of accounting. Collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned. Prerequisite: T-MAT 110.			
T-BUS 121 Accounting	5	2	6
Partnership and corporation accounting, including a study of payrolls, federal and state taxes. Emphasis is placed on the recording, summarizing and interpreting data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems. Prerequisite: T-BUS 120.			
T-BUS 123 Business Finance	3	0	3
Financing of business units, as individuals, partnerships, corporations, and trusts. A detailed study is made of short-term, long-term, and consumer financing. Prerequisite: None.			
T-BUS 124 Business Finance	3	0	3
Financing, federal, state, and local government and the ensuing effects upon the economy. Factors affecting supply of funds, monetary and credit policies. Prerequisite: T-BUS 123.			
T-BUS 178 Traffic and Transportation	3	0	3
A introductory course covering the American transportation system. Emphasis is placed on developments leading to the legislative supervision of the carriers, freight traffic territories, traffic flow, freight classifications, freight rates, and freight claims. Prerequisite: None.			
T-BUS 179 Traffic and Transportation	3	0	3
A study of the construction and filing of tariffs, freight rates, terminal facilities, storage, weights, routing, warehousing, and material handling. Prerequisite: T-BUS 178.			

	Class	Lab.	Credit
T-BUS 181M Human Anatomy and Physiology	4	0	4
A study of the general plan of the human body and the nine systems. Designed for understanding how the body functions, moves and stands erect, distributes food and oxygen and removes waste and provides for survival. Prerequisite: None.			
T-BUS 183E Executive Terminology and Vocabulary	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: T-BUS 107.			
T-BUS 183L Legal Terminology and Vocabulary	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: T-BUS 107.			
T-BUS 183M Medical Terminology and Vocabulary	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: T-BUS 107.			
T-BUS 205 Advanced Typewriting	2	3	3
Emphasis is placed on the development of individual production rates. The student learns the techniques needed in planning and in typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter forms, methods of duplication, statistical tabulation, and the typing of reports, manuscripts and legal documents. Prerequisite: T-BUS 104. Speed requirement, 50 words per minute for five minutes.			
T-BUS 206E Executive Dictation and Transcription	3	2	4
Develops the skill of taking dictation and of transcribing at the typewriter materials appropriate to the executive course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Minimum dictation rate of 100 words per minute required for five minutes on new material. Prerequisite: T-BUS 108.			
T-BUS 206L Legal Dictation and Transcription	3	2	4
Develops the skill of taking dictation and of transcribing at the typewriter materials appropriate to the legal course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Minimum dictation rate of 100 words per minute required for five minutes on new material. Prerequisite: T-BUS 108.			
T-BUS 206M Medical Dictation and Transcription	3	2	4
Develops the skill of taking dictation and of transcribing at the typewriter materials appropriate to the medical course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Minimum dictation rate of 100 words per minute required for five minutes on new material. Prerequisite: T-BUS 108.			
T-BUS 207E Executive Dictation and Transcription	3	2	4
Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of			



	Class	Lab.	Credit
business and professional offices. Minimum dictation rate of 110 words per minute required for five minutes on new material. Prerequisite: T-BUS 206E.			
T-BUS 207L Legal Dictation and Transcription	3	2	4
Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of legal and professional offices. Minimum dictation rate of 110 words per minute required for five minutes on new material. Prerequisite: T-BUS 206L.			
T-BUS 207M Medical Dictation and Transcription	3	2	4
Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of medical and professional offices. Minimum dictation rate of 110 words per minute required for five minutes on new material. Prerequisite: T-BUS 206M.			
T-BUS 208E Executive Dictation and Transcription	3	2	4
Principally a speed building course, covering materials appropriate to the executive course of study, with emphasis on speed as well as accuracy. Minimum dictation rate of 120 words per minute required for five minutes on new material. Prerequisite: T-BUS 207E.			
T-BUS 208L Legal Dictation and Transcription	3	2	4
Principally a speed building course, covering materials appropriate to the legal course of study, with emphasis on speed as well as accuracy. Minimum dictation rate of 120 words per minute required for five minutes on new material. Prerequisite: T-BUS 207L.			
T-BUS 208M Medical Dictation and Transcription	3	2	4
Principally a speed building course, covering materials appropriate to the medical course of study, with emphasis on speed as well as accuracy. Minimum dictation rate of 120 words per minute required for five minutes on new material. Prerequisite: T-BUS 207M.			
T-BUS 210E Typing Office Practice	2	3	3
A course designed to familiarize the student with the forms and routines found in a			

	Class	Lab.	Credit
typical business. Emphasis is placed upon correct procedures and adaptability to varying office methods. Prerequisite: T-BUS 205.			
T-BUS 210L Typing Office Practice	2	3	3
A course designed to familiarize the student with the forms and routines found in a typical legal office. Emphasis is placed upon correct procedures and adaptability to varying office methods. Prerequisite: T-BUS 205L.			
T-BUS 210M Typing Office Practice	2	3	3
A course designed to familiarize the student with the forms and routines found in a typical medical office. Emphasis is placed upon correct procedures and adaptability to varying office methods. Prerequisite: T-BUS 205M.			
T-BUS 211 Office Machines	2	2	3
Instructions in the operation of the bookkeeping-accounting machines, duplicating equipment, and the dictating and transcribing machines. Prerequisite: T-BUS 110.			
T-BUS 212E Machine Transcription—Business	1	2	2
A study and practice course in the use of transcribing machines in business dictation. Proficiency in word usage, correct grammar, and letter styles will be emphasized. Prerequisite: T-BUS 103.			
T-BUS 212L Machine Transcription—Legal	1	2	2
A study and practice course in the use of transcribing machines in legal dictation. Proficiency in word usage, legal terms, and legal forms will be emphasized. Prerequisites: T-BUS 103 and T-BUS 183L.			
T-BUS 212M Machine Transcription—Medical	1	2	2
A study and practice course in the use of transcribing machines in medical dictation. Proficiency in word usage, medical terms, and medical forms will be emphasized. Prerequisites: T-BUS 103 and T-BUS 181M.			
T-BUS 214 Secretarial Procedures	3	2	4
Designed to acquaint the student with the responsibilities encountered by a secretary during the work day. These include the following: receptionist duties, handling the mail, telephone techniques, travel information, telegrams, office records, purchasing of supplies, office organization, and insurance claims. Prerequisite: None.			
T-BUS 215E Executive Office Application	6	0	6
During the sixth quarter only, students are assigned to work in a business professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the executive course of study. Prerequisites: T-BUS 214, T-BUS 205, T-BUS 208, T-BUS 211.			
T-BUS 215L Legal Office Application	6	0	6
During the sixth quarter only, students are assigned to work in a legal or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the legal course of study. Prerequisites: T-BUS 214, T-BUS 205, T-BUS 208, T-BUS 211.			
T-BUS 215M Medical Office Application	6	0	6
During the sixth quarter only, students are assigned to work in a medical or professional office for six hours per week. The objective is to provide actual work experience for			

	Class	Lab.	Credit
secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the medical course of study. Prerequisites: T-BUS 214, T-BUS 205, T-BUS 208, T-BUS 211.			
T-BUS 217 Business Law	3	0	3
A study of the powers, policies, methods, and procedures used by the various federal, state and local administrative agencies in promoting and regulating business enterprises. It includes a consideration of the constitutional and statutory limitations on these bodies and judicial review of administrative action. Prerequisite: T-BUS 116.			
T-BUS 219 Credit Procedures and Problems	3	0	3
Principles and practices in the extension of credit; collection procedures; laws pertaining to credit extension and collection are included. Prerequisite: T-BUS 120.			
T-BUS 222 Accounting	5	2	6
Thorough treatment of the field of general accounting, providing the necessary foundation for specialized studies that follow. The course includes, among other aspects, the balance sheet, income and surplus investments, and analysis of working capital. Prerequisite: T-BUS 121.			
T-BUS 223 Accounting	5	2	6
Additional study of intermediate accounting with emphasis on investments, plant and equipment, intangible assets and deferred charges, long-term liabilities, paid-in capital, retained earnings, and special analytical processes. Prerequisite: T-BUS 222.			
T-BUS 225 Cost Accounting	3	2	4
Nature and purposes of cost accounting; accounting for direct labor, materials, and factory burden; job cost, and standard cost principles and procedures; selling and distribution cost; budgets, and executive use of cost figures. Prerequisite: T-BUS 121.			
T-BUS 227 Advanced Accounting	3	2	4
Advanced accounting theory and principles as applied to special accounting problems, bankruptcy proceedings, estates and trusts, consolidation of statements, parent, and subsidiary accounting. Prerequisite: T-BUS 223.			
T-BUS 229 Taxes	3	2	4
Application of federal and state taxes to various businesses and business conditions. A study of the following taxes: income, payroll, intangible, capital gain, sales and use, excise, and inheritance. Prerequisite: T-BUS 121.			
T-BUS 232 Sales Development	3	0	3
A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required. Prerequisite: None.			
T-BUS 233 Personnel Management	3	0	3
Principles of organization and management of personnel, procurement, placement, training, performance checking, supervision, remuneration, labor relations, fringe benefits and security. Prerequisite: None.			
T-BUS 235 Business Management	3	0	3
Principles of business management including overview of major functions of management, such as planning, staffing, controlling, directing, and financing. Clarification of			



Class Lab. Credit

the decision-making function versus the operating function. Role of management in business—qualifications and requirements. Prerequisite: None.

T-BUS 237 Wholesaling 3 0 3

The development of wholesaling; present day trends in the United States. A study of the functions of wholesaling. Prerequisite: None.

T-BUS 239 Marketing 5 0 5

A general survey of the field of marketing, with a detailed study of the functions, policies, and institutions involved in the marketing process. Prerequisite: None.

T-BUS 243 Advertising 3 2 4

The role of advertising in a free economy and its place in the media of mass communications. A study of advertising appeals; product and market research; selection of media; means of testing effectiveness of advertising. Theory and practice of writing advertising copy for various media. Prerequisite: None.

T-BUS 245 Retailing 3 0 3

A study of the role of retailing in the economy including development of present retail structure, functions performed, principles governing effective operation and managerial problems resulting from current economic and social trends. Prerequisite: None.

T-BUS 247 Business Insurance 3 0 3

A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included. Prerequisite: None.

T-BUS 255 Interpreting Accounting Records 3 0 3

Designed to aid the student in developing a "use understanding" of accounting records, reports and financial statements. Interpretation, analysis, and utilization of accounting statements. Prerequisite: T-BUS 121.

T-BUS 266 Budget and Record Keeping 3 0 3

The basic principles, methods, and procedures for preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role

	Class	Lab.	Credit
they play. Emphasis on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning. Prerequisite: T-BUS 121.			
T-BUS 269 Auditing	3	2	4
Principles of conducting audits and investigations; setting up accounts based upon audits; collecting data on working papers; arranging and systemizing the audit, and writing the audit report. Emphasis is placed on detailed audits, internal auditing, and internal control. Prerequisite: T-BUS 223.			
T-BUS 271 Office Management	3	0	3
Presents the fundamental principles of office management. Emphasis on the role of office management including its functions, office automation, planning, controlling, organizing and actuating office problems. Prerequisite: None.			
T-BUS 272 Principles of Supervision	3	0	3
Introduces the basic responsibilities and duties of the supervisor and his relationship to superiors, subordinates, and associates. Emphasis on securing an effective work force and the role of the supervisor. Methods of supervision are stressed. Prerequisite: None.			
T-BUS 280 Traffic and Transportation	3	0	3
Stresses through-route and rates, milling in transit, technical tariff and rate interpretation, overcharges and undercharges, loss and damage, import and export tariff, classification committee procedure, and rate committee procedures. Prerequisite: T-BUS 179.			
T-BUS 281 Traffic and Transportation	3	0	3
To acquaint the student with the application of the Interstate Commerce Act to practical transportation and the general procedure of requesting changes before the Interstate Commerce Commission. Prerequisite: T-BUS 280.			
T-BUS 284M Medical Terminology and Vocabulary	3	0	3
Greater emphasis on an understanding of the terminology and vocabulary appropriate to the medical course of study, as it is used in medical and professional offices. Prerequisite: T-BUS 183M.			
T-BUS 285 ICC Law	3	0	3
Designed to aid the student in making a thorough analysis of the Interstate Commerce Act; review history of Act and related acts. Prerequisite: T-BUS 116.			
T-BUS 286 ICC Law	3	0	3
A detailed study is made of the procedural policy involved in appearing before the Interstate Commerce Commission. Prerequisite: T-BUS 285.			
T-BUS 287 ICC Law	3	0	3
Devoted to case study of applications of the Interstate Commerce Act. Prerequisite: T-BUS 286.			
T-BUS 290 Motor Carrier	3	0	3
An introduction to special problems relating to tariffs and rates of motor carriers. Prerequisite: None.			
T-BUS 291 Motor Carrier	3	0	3
A continuation of special problems relating to tariffs, rates, circulars, pertaining to the Motor Carrier field. Prerequisite: T-BUS 290.			

	Class	Lab.	Credit
T-BUS 295 Traffic Claims	3	0	3
Designed to provide knowledge about rights and liabilities of carriers, cosigners, and consignees; claims, their procedure, settlement, and prevention. Prerequisite: None.			
T-BUS 299 Traffic Management	3	0	3
Develops the purpose, function, and operation of traffic management; illustrates the differences in various areas of traffic; and shows relationship to other business operations. Prerequisite: None.			
BUS 1103 Small Business Operations	3	0	3
An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations. Prerequisite: None.			
BUS 1105 Industrial Organizations	3	0	3
Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost. Prerequisite: None.			

CHEMISTRY

T-CHM 101 Chemistry	4	2	5
Study of the physical and chemical properties of substances, chemical changes; elements, compounds, gases, chemical combinations; weights and measurements; theory of metals; acids, bases, salts, solvents, solutions, and emulsions. In addition, study of carbohydrates; electrochemistry, electrolytes, and electrolysis in their application of chemistry to industry. Prerequisite: None.			

CIVIL ENGINEERING

T-CIV 101 Surveying	2	6	4
Theory and practice of plane surveying including taping, differential and profile leveling, cross sections, earth work computations, transit, standia, and transit-tape surveys. Prerequisites: T-MAT 102, T-DFT 107.			
T-CIV 102 Surveying	2	6	4
Triangulation of ordinary precision; use of plane table, calculation of areas of land; land surveying; topographic surveys and mapping. Prerequisite: T-CIV 101. Corequisites: T-MAT 102, T-DFT 102.			
T-CIV 105 Architectural Materials and Methods	3	3	4
Materials used in the construction of architectural structures will be studied. Field trips to construction sites and study of manufacturer's specifications for materials. Properties and standard sizes of structural materials, and construction techniques are included. Prerequisite: None.			
T-CIV 106 Architectural Mechanical Equipment	3	3	4
General study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code requirements pertaining to residential and com-			

	Class	Lab.	Credit
mercial structures. Reading and interpretation of working drawings by mechanical engineers. Coordination of mechanical and electrical features with structural and architectural designs. Prerequisite: None.			
T-CIV 114 Statics	5	0	5
Forces, resultants, and types of force systems, moments, equilibrium of coplanar forces by analytical and graphic methods; stresses and reactions in simple structures; equilibrium of forces in space, static and kinetic friction; center of gravity, centroids, and moment of inertia. Prerequisite: T-MAT 102.			
T-CIV 201 Properties of Engineering Materials	2	3	3
Study and testing of the properties of ferrous and nonferrous metals, timber, stone, clay products, bituminous cementing materials; load and strain measurements; behavior of materials under load; qualities other than strength; control of the properties of the materials; non-destructive tests. Prerequisite: T-PHY 101. Corequisite: T-CIV 216.			
T-CIV 202 Properties of Soils	2	3	3
Study of soil types and their physical properties; mechanical analysis and tests of soils; techniques of subsurface investigation; earth pressure theories; bearing capacity; stability of slopes; hydrostatics of ground water; methods of compaction and consolidation. Prerequisite: T-CIV 216.			
T-CIV 216 Strength of Materials	3	2	4
Fundamentals stress and strain relationship; torsion; shear and bending moments; stresses and deflections in beams; introduction to statically indeterminate beams; columns; combined stresses. Prerequisites: T-CIV 114, T-MAT 103.			
T-CIV 217 Construction Methods and Equipment	3	2	4
Excavating methods and equipment used in building and highway construction; pile driving; construction techniques and equipment used in reinforced concrete buildings, bridges, lift-slabs, thin-shells and folded plates, erection methods and equipment of structural steel buildings and bridges; carpentry in house and heavy timber construction; construction safety. Field inspection trips. Prerequisites: T-DFT 102, T-CIV 102.			
T-CIV 218 Plain Concrete	3	3	4
Study and testing of the composition and properties of concrete including cementing agents, aggregates, admixtures, and air-entrainment; design and proportioning of concrete mixes to obtain pre-determined strengths and properties; methods of placing and curing concrete; standard control tests of concrete. Corequisite: T-CIV 201.			
T-CIV 219 Steel and Timber Construction	3	2	4
Analysis and basic design of steel beams, tension members, columns, and riveted, high strength bolted, welded connections; study of plate girders, industrial building roofs and vents, continuous spans, lightweight steel construction; use of American Institute of Steel Construction Manual; introduction to rigid frames and plastic design in steel. Design of timber members and their connections. Field inspection trips. Prerequisite: T-CIV 216.			
T-CIV 221 Reinforced Concrete Construction	3	2	4
Analysis and design of reinforced concrete beams, floor systems, and columns. Use of CRSI Design Handbook. Introduction to ultimate strength design. Principles of pre-stressed and precast concrete. Field inspection trips. Prerequisite: T-CIV 216.			

CYBERNETICS

	Class	Lab.	Credit
T-CYB 201 Electromechanical Systems	3	2	4
An introduction to electromechanical systems and their components. Basic measuring and control devices, including fluid power, electrical, electronic, mechanical and optical devices. Prerequisites: T-ELN 105, T-MAT 103.			
T-CYB 202 Electromechanical Systems	3	6	5
A study of the fundamental components of many electromechanical systems—synchros, resolvers, servometers, and generators, choppers, recorders, plotters, servo mechanisms, printers, digital readout, teletype, numerical control devices. Laboratory includes study in the maintenance of electromechanical devices. Prerequisite: T-CYB 201.			
T-CYB 203 Electromechanical Systems	3	6	6
Applications of electromechanisms in systems design. Introduction to closed loop operation. System analysis. Process and machine tool controllers of the electrical, hydraulic, and pneumatic types. Laboratory provides study in the systems approach to the utilization of electromechanical devices. Prerequisite: T-CYB 201.			

DATA PROCESSING

T-EDP 102 Functional Wiring Principles	3	2	4
The fundamental principles of wiring necessary to perform basic machine functions of printing, punching, comparing and selection. A series of laboratory experiments support the theoretical aspects of this course. Prerequisite: T-EDP 104.			
T-EDP 104 Introduction to Data Processing Systems	3	2	4
Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers, prerequisite for all programming courses. Prerequisite: T-BUS 102 or equivalent.			
T-EDP 105 Procedure Writing, Flow Charting, and Block Diagraming	3	2	4
Designed to provide the student with concepts and principles of block diagraming and flow charting. The student will be adequately prepared to write job descriptions. It also enables the student to make block diagrams of existing data processing installations and to block diagram new jobs. Prerequisite: T-EDP 102.			
T-EDP 201 Introduction to Computers	3	2	4
This is a basic introduction to computers. It will give the student a fundamental knowledge of computers, what they are, and how they work. It will also cover the core, card, disk, tape, transmitter, software and hardware. Prerequisite: T-EDP 105.			
T-EDP 210 Report Program Generator (RPG) Programming	4	0	4
This course will provide the student with sufficient knowledge to program and utilize the RPG language at any level. The student will analyze, evaluate and program commercial applications. Prerequisite: T-EDP 201.			
T-EDP 220 Systems Analyst Project	5	0	5
This course is a summation of the skills and knowledge learned which will now be demonstrated in a practical application. Each student will be required to complete one separate project with minimum supervision from the instructor. Prerequisite: T-EDP 210.			

DESIGN

	Class	Lab.	Credit
T-DES 116 Design Philosophy	3	0	3
This course will consist of selected readings and discussions of viewpoints, philosophies, and observations of leading designers. The existing dilemma concerning design ethics shall be incorporated. Prerequisite: None.			
T-DES 117 Visual Design I	2	6	4
A study of design fundamentals to include the elements of design construction, the principles which determine the organization and relationship of these elements, and the analysis of design. Application of these fundamentals in drawing and elementary design problems leading to an understanding of form and space, primarily two-dimensional. Prerequisite: None.			
T-DES 118 Visual Design II	3	3	4
An extension of Visual Design I dealing with problems of two-dimensional manipulation and delineation of space. Particular emphasis is placed on the nature of color, color chords, organization, composition, optical and psychological implications. Prerequisite: T-DES 117.			
T-DES 216 Tectonic Design	3	3	4
An exploration of three-dimensional design using a variety of materials to define space and mass as they relate to function and aesthetics. Experiments in construction and ornamentation will be an integral part of the course. Prerequisite: T-DES 117.			
T-DES 225 Furniture Styling	2	3	3
A comprehensive study of the periods and styles of furniture, from the Gothic Period to contemporary innovations, including factors which influenced their development. Methods of styling and decorating will be incorporated with the basic principles of design. Prerequisite: None.			
T-DES 239 Rendering	2	3	3
This course will include techniques of heightening the three-dimensional effects of both pictorial and orthographic drawings through the use of variation in value, texture, and color. Additional depth of experience will be gained in preparing presentation pictorials. Prerequisite: T-DFT 105.			
T-DES 245 Anatomical Relationships	5	0	5
This course is a comprehensive study of the human form as it relates to objects and activities of work, family living, and circulation. Emphasis is placed on the implications found for furniture and interior design. Prerequisite: None.			
T-DES 250 Interior Planning and Display	3	3	4
This course is a study of architectural considerations, furniture grouping, correlation of finish, fabrics, and accessories as related to customer services and show room planning. Prerequisites: T-DES 118, T-DFT 105, T-DES 239, T-DES 245.			

DRAFTING

T-DFT 101 Technical Drafting	2	6	4
The field of drafting is introduced as the student begins study of drawing principles and practices for print reading and describing objects in the graphic language. Basic skills and techniques of drafting included are: use of drafting equipment, lettering,			

freehand orthographic and pictorial sketching, geometric construction, orthographic instrument drawing of principle views, and standards and practices of dimensioning. The principles of isometric, oblique, and perspective are introduced. Prerequisite: None.

T-DFT 102 Technical Drafting	2	6	4
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The application of orthographic projection principles to the more complex drafting problems, primary and secondary auxiliary views, simple and successive revolutions, and sections and conventions will be studied. Most important is the introduction of the graphical analysis of space problems. Problems of practical design elements involving points, lines, planes, and a combination of these elements shall be studied. Dimensioning practices for "details" and "working drawings," approved by the American Standards Association, will also be included. Introduction is given to intersections and developments of various types of geometrical objects. Prerequisite: T-DFT 101.

T-DFT 103 Technical Drafting	2	6	4
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Intersection and developments and their practical solutions. Where applicable, model solutions accompany the problems. The various techniques employed to produce and render isometric and oblique drawings, isometric, dimetric and trimetric projections, will be included. Prerequisite: T-DFT 102.

T-DFT 105 Technical Drafting	2	6	4
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Intersections and developments and their practical applications to pattern drawing, with model solutions. Mechanical and freehand techniques used to produce isometric, dimetric, trimetric, and perspective drawings incorporating basic rendering techniques. Charts, graphs and other methods of visual presentation are included. Prerequisite: T-DFT 102.

T-DFT 106 Architectural Drafting	2	6	4
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A course designed to provide fundamental knowledge of the principles of drafting. Basic skills and techniques of drafting included are: use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, orthographic instrument drawing of principal views. Projection problems dealing with principles of descriptive geometry, involving points, lines, planes, and connectors. The principles of isometric, oblique, and perspective drawings are introduced. Prerequisite: None.

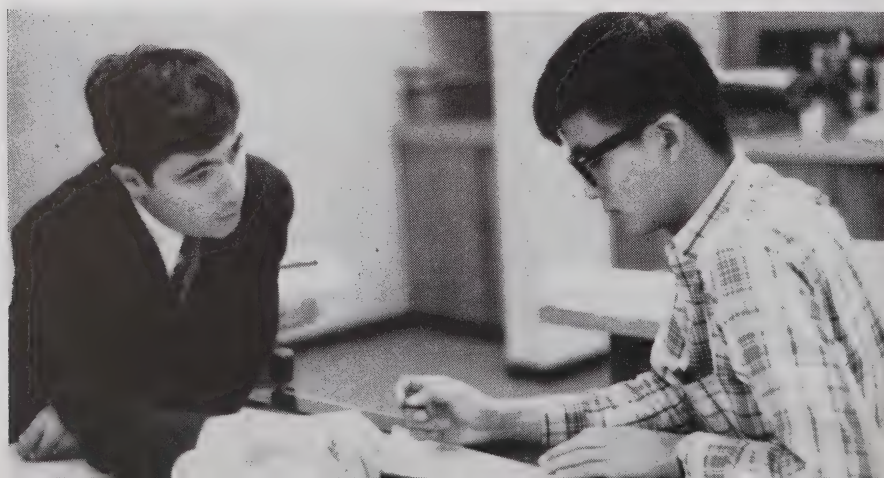
T-DFT 107 Architectural Drafting	2	6	4
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Development of techniques in architectural lettering, symbols, and their interpretation; dimensioning, freehand and instrument drafting. Drawing of construction details, using appropriate material symbols and connections. Sections, scale details and full-size details will be prepared from preliminary sketches. Applications of descriptive geometry are used in visualization and analytical solutions of the drafting problems involving auxiliary views, intersections and developments. Prerequisite: T-DFT 106.

T-DFT 108 Architectural Drafting	0	9	3
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An approach in depth to the study of architectural drafting. Development of techniques in architectural lettering, dimensioning, freehand sketching and instrument drawing. Drawings of construction details, using appropriate material symbols and conventions. Working drawings, including plans, elevations, sections, scale details and full-size details will be prepared from preliminary sketches. Prerequisites: T-DFT 107, T-CIV 106, T-CIV 105.

	Class	Lab.	Credit
T-DFT 201 Technical Drafting	2	6	4
Applications and constructions of charts, graphs, and nomographs in engineering and technical data. Screw threads, springs, keys, rivets, piping, and welding symbols, methods of representing and specifying will be covered. Basic mechanisms of motion transfer, gears and cams, will be studied and drawn with emphasis on methods of specifying, calculating, dimensions, and delineating. Prerequisite: T-DFT 103.			
T-DFT 204 Descriptive Geometry	2	4	4
Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem. Prerequisites: T-DFT 102, T-MAT 102.			
T-DFT 205 Design Drafting I	2	6	4
Basic design is introduced in the study of motion transfer mechanisms as they relate to power trains. Principles of design sketching, design drawing, layout drafting, detailing from layouts, production drawings and simplified drafting practices constitute areas of study. Types and methods of specifying materials and workmanship are an integral part of the course. Prerequisites: T-DFT 204, T-MAT 102, T-PHY 102.			
T-DFT 206 Design Drafting II	2	6	4
Research to solve a problem in design by consulting various manuals, periodicals, and through laboratory experiments. A written technical report, preliminary design sketches, layout drawings, detail drawings, assembly and sub-assembly drawings, pictorial drawings, exploded pictorial assembly, patent drawings and specifications are required as a part of the problem. Prerequisites: T-DFT 205, T-DFT 201.			
T-DFT 211 Mechanisms	3	2	4
Mathematical and drafting room solutions of problems involving the principles of machine elements. Study of motions of linkages, velocities and acceleration of points within a link mechanism; layout methods for designing cams, belts, pulleys, gears and gear trains. Prerequisites: T-DFT 201 & 204, T-MAT 103, T-PHY 106.			
T-DFT 212 Jig and Fixture Design	2	6	4
Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with the types of jigs and fixtures. Prerequisite: T-DFT 205, T-DFT 211.			



	Class	Lab.	Credit
T-DFT 220 Architectural Drafting	2	9	5
Drawing of structural plans and details as prepared for building construction including steel, concrete, and timber structural components. Appropriate details and drawings necessary for construction and fabrication of structural members. Reference materials will be used to provide the draftsman with skills and knowledge in locating data and in using handbooks. Prerequisite: T-DFT 108.			
T-DFT 221 Architectural Drafting	2	9	5
Drawing of plans and details as prepared for mechanical equipment such as air conditioning, plumbing and electrical systems by using appropriate symbols and conventions. Consideration is given to coordination of mechanical and electrical features with structural and architectural components. Prerequisite: T-DFT 220.			
T-DFT 222 Architectural Drafting	2	9	5
Preparation of the complete set of working drawings for the architectural structure. Preparation of millwork drawings, cabinets and built-in equipment detail drawings, and door, window, and room schedules. Site and landscaping plans will be studied and drawn. Final assembly of the complete document for construction purposes will be made. Prerequisites: T-DFT 221, T-CIV 101, T-DFT 235.			
T-DFT 230 Structural Drafting	2	6	4
A concentrated study and drawing of structural plans, details and shop drawings of the structural components of buildings to include steel, reinforced concrete, and timber structures. Appropriate symbols, conventions, dimensioning practices, and notes as used by the draftsman will be included. Emphasis will be placed on drafting of appropriate drawings for fabrication and erection of the structural components. Prerequisites: T-DFT 220, T-CIV 105.			
T-DFT 231 Architectural Mechanical Equipment Drafting	2	6	4
A detailed study of mechanical equipment and preparation of plans and detail drawings as prepared by the mechanical engineering consultant or contractor for the architectural structure. Heating and air conditioning, lighting and electrical, plumbing and other mechanical equipment as necessary for construction will be included in this study. Emphasis will be placed on drafting techniques used in preparing appropriate drawings and details. Prerequisites: T-DFT 221, T-AHR 106.			
T-DFT 233 Office Practice Seminar	2	0	2
A study of the professional relationship of the architectural firm in relation to clients, contractors, suppliers, consultants and other architects. Ethics of the profession as applicable to the draftsman's roll in the architectural firm will be stressed. Prerequisite: None.			
T-DFT 235 Codes, Specifications and Contract Documents	3	3	4
A study of building codes and their effect in relation to specifications and drawings. The purpose and writing of specifications will be studied along with their legal and practical application to working drawings. Contract documents will be analyzed and studied for the purpose of client-architect-contractor responsibilities, duties and mutual protection. Prerequisite: T-DFT 220.			

	Class	Lab.	Credit
T-DFT 236 Construction Estimating and Field Inspection	3	3	4
Interpretation of working drawings for a project; preparation of material and labor quantity surveys from plans and specifications; approximate and detailed estimates of cost. The student will study materials take-off, labor take-off, sub-contractors' estimates, overhead costs, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Prerequisite: T-DFT 235.			
T-DFT 240 Furniture Drafting	2	6	4
The student will become familiar with the types of drawings used in furniture making, general types of furniture based on function and market, including built-in. Preliminary sketches will be followed by simple assembly-details and detail drawing of typical constructions for cases, frames, drawers, doors and seating pieces. Prerequisite: T-DFT 105.			
T-DFT 241 Furniture Design Drafting	2	6	4
The student will pursue the more complex detailing problems involving construction, carving delineations and less traditional materials such as formed plywood, plastics and metals. Specifications and bills of materials will be included. Prerequisites: T-DFT 240, T-DES 118.			
T-DFT 242 Furniture Design Drafting	2	6	4
Research to solve the design problem of developing a correlated furniture group using any necessary experiments and reference sources. A written report outlining and defining the entire project accompanied by preliminary sketches, presentation drawings, selected finished details and specifications is required as a part of the problem. Prerequisites: T-DFT 241, All Design Courses.			
T-DFT 249 Merchandising Graphics	3	2	4
A study of graphic arts media, techniques, layout, type, and reproduction methods applicable to direct mail, display art, newspaper, magazine, catalog, tags, labels, etc. Prerequisite: None.			
DFT 1101 Schematics & Diagrams: Power Mechanics	0	3	1
Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, views, dimensioning procedures, and notes. Prerequisite: None.			
DFT 1104 Blueprint Reading: Mechanical	0	3	1
Interpretation and reading of blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes. Prerequisite: None.			
DFT 1105 Blueprint Reading: Mechanical	0	3	1
Further practice in interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: DFT 1104.			
DFT 1106 Blueprint Reading: Mechanical	0	3	1
Advanced blueprint reading and sketching as related to detail and assembly drawings used in machine shops. The interpretation of drawings of complex parts and mechanisms for features of fabrication, construction and assembly. Prerequisite: DFT 1105.			
DFT 1110 Blueprint Reading: Building Trades	0	3	1
Principles of interpreting blueprints and trade specifications common to the building			

trades. Development of proficiency in making three view and pictorial sketches. Prerequisite: None.

DFT 1113 Blueprint Reading: Electrical	1	3	2
Interpretation of schematics, diagrams and blueprints applicable to electrical installations with emphasis on electrical plans for domestic and commercial buildings. Sketching schematics, diagrams, and electrical plans for electrical installations using appropriate symbols and notes according to the applicable codes will be a part of this course. Prerequisite: DFT 1110.			

ECONOMICS

T-ECO 102 Economics	3	0	3
The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large. Prerequisite: None.			

T-ECO 104 Economics	3	0	3
Greater depth in principles of economics, including a penetration into the composition and pricing of national output, distribution of income, international trade and finance, and current economic problems. Prerequisite: T-ECO 102.			

T-ECO 106 Economics of Transportation	3	0	3
Acquaints the student with the economic aspects of transportation. Complete discussion from the earliest form of basic transportation to our present complex system of transportation. In addition to the historical approach, consideration is given to the economic factors involved in plant location and principles involved in present-day developments of transportation. Prerequisite: T-ECO 102.			

T-ECO 108 Consumer Economics	3	0	3
Designed to help the student use his resources of time, energy, and money to get the most out of life. It gives the student an opportunity to build useful skills in buying, managing his finances, increasing his resources, and to understand better the economy in which he lives. Prerequisite: None.			

ELECTRICITY

T-ELC 101 Fundamentals of Electricity	4	6	6
Elementary principles of electricity including: basic electric units, Ohm's Law, Kirchhoff's Law, network theorems, magnetics, basic electrical measuring instruments, inductance, capacitance, sine wave analysis, and non-resonant resistive, inductive and capacitive networks. Prerequisite: None.			

T-ELC 102 Fundamentals of Electricity	4	6	6
Series and parallel resonant-circuit analysis, resonant and non-resonant transformer analysis, basic diode power supply analysis, introduction to non-linear resistive control devices, and introduction to electro-mechanical devices. Prerequisite: T-ELC 101.			

T-ELC 201 Electrical Machinery	3	0	3
A course in the basic understanding and application of electricity to modern industrial machinery. Included is a study of direct current motors, motor controls and protecting			



	Class	Lab.	Credit
devices, transformers, and the industrial applications of this equipment. Prerequisite: T-PHY 103.			

T-ELC 210 Rotating Devices	2	2	3
Introduction to electrical machinery. AC and DC motor and generator principles, synchros and servomechanisms, alternators and dynamotors, Ward-Leonard and amplidyne control systems will be analyzed. A general knowledge of the theory, operation, and maintenance of these devices and systems will be stressed. Prerequisites: T-ELC 102, T-PHY 102.			

T-ELC 215 Electrical Machines	5	3	6
Principles of direct-current generators and motors, types and characteristics; alternating current generators, transformers, three phase motors, synchronous motors and single phase motors. Prerequisites: T-MAT 102; T-PHY 102; T-ELC 102.			

T-ELC 240 Electrical Analysis & Maintenance	3	3	4
An introduction to troubleshooting techniques of the common problems of direct current and alternating current machines, transformers, circuit breakers and regulators. Emphasis will be on scheduling of maintenance, lubrication; and principles of plant maintenance. Prerequisites: T-ELC 225; T-ELN 208.			

T-ELC 246 Special Project	2	6	4
Students are required to design and construct a project approved by the instructor. Includes selection of project, design, construction and testing of completed project. Prerequisites: T-ELC 240; T-ELN 208; T-DFT 211.			

	Class	Lab.	Credit
ELC 1112 Direct and Alternating Current	5	12	9
A study of the electrical structure of matter and electron theory, the relationship between voltage, current, and resistance in series, parallel, and series-parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchhoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits. Prerequisite: None.			
ELC 1113 Alternating Current and Direct Current Machines and Controls	5	12	9
Provides fundamental concepts in single and polyphase alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the use of electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type control used in small appliances such as: thermostats, timers, or sequencing switches. Prerequisites: ELC 1112, MAT 1115.			
ELC 1118 Industrial Electronics	3	6	5
Basic theory, operating characteristics, and application of vacuum tubes such as: diodes, triodes, tetrodes, pentodes, and gaseous control tubes. An introduction to amplifiers using triodes, power supplies using diodes, and other basic applications. Prerequisite: ELC 1113.			
ELC 1119 Industrial Electronics	3	6	5
Basic industrial electronic systems such as: motor controls, alarm systems, heating systems and controls, magnetic amplifier controls, welding control systems using thyatron tubes, and other basic types of systems commonly found in most industries. Prerequisite: ELC 1118.			
ELC 1124 Residential Wiring	5	9	8
Provides instruction and application in the fundamentals of blueprint reading, planning, layout, and installation of wiring in residential applications such as: services, switchboards, lighting, fusing, wire sizes, branch circuits, conduits, National Electrical Code regulations in actual building mock-ups. Prerequisites: ELC 1113, DFT 1110.			
ELC 1125 Commercial and Industrial Wiring	5	12	9
Layout, planning, and installation of wiring systems in commercial and industrial complexes, with emphasis upon blueprint reading and symbols, the related National Electrical Codes, and the application of the fundamentals to practical experience in wiring, conduit preparation, and installation of simple systems. Prerequisites: ELC 1118, ELC 1124.			

ELECTRONICS

T-ELN 101 Electronic Instruments & Measurements	1	6	3
A study of basic electronic instruments, their theory of operation, function, tolerances, and calibration. Both service and laboratory instruments will be studied. Laboratory experience will provide application of each type instrument studied. Prerequisite: T-ELC 102.			
T-ELN 105 Control Devices	5	6	7
A study in depth of the electrical characteristics of vacuum tubes and transistors. Basic parameters and applications of each type device to the three configurations of a three terminal two port system will be included. Prerequisite: T-ELC 102.			

	Class	Lab.	Credit
T-ELN 201 Industrial Controls	3	2	4
Industrial controls is the study of modern methods of controlling machinery by electronic circuitry. Machinery controls and electronic mechanisms that automatically operate machines will be studied. Types of motors, generators, control signals and devices, thyatrons, gates, switches, and servomechanism circuits are major areas of study. Prerequisite: T-PHY 103.			
T-ELN 205 Applications of Vacuum Tubes and Transistors	5	6	7
Practical applications of vacuum tubes and transistors to basic audio amplifiers, radio frequency amplifiers, detectors, modulators and oscillators. Prerequisite: T-ELN 105.			
T-ELN 208 Industrial Electronics	5	4	6
Electronics as applied to a production system; rectification; electronically controlled rectifiers; servomechanisms; motors; magnetic amplifiers; ultrasonic cleaning; and variable strobe light. Prerequisite: T-ELN 105.			
T-ELN 210 Semiconductor Circuit Analysis	5	3	6
A study in some depth of the analysis and design of transistor circuits. Network theorems and equivalent circuits are used extensively in evaluating total circuit performance. Device peculiarities and limitations pertinent to reliable operations are considered. H. Y. Z. and T. parameters are employed as well as signal-flow graphs. Prerequisite: T-ELN 105.			
T-ELN 214 Wave Shaping and Pulse Circuits	2	3	3
Broadband amplifiers, magnetic amplifiers, multivibrators, wave shaping techniques, chopper amplifiers, clipper and clamper circuits. Prerequisites: T-ELN 105, T-MAT 103.			
T-ELN 215 Wave Shaping and Pulse Circuits	2	3	3
Pulse techniques, diode switches, gates, step-counters, restorers and other specific circuits which function as switches. Prerequisite: T-ELN 214.			
T-ELN 225 Transmission and Propagation	3	0	3
An introduction to the electromagnetic radiation, principles of antenna, radiation patterns and field strength. The characteristics and use of transmission lines in radio frequency application. Factors involved in propagation, ground waves, reflections, sky waves, atmospheric effects, ionosphere, fading, noise, static, wire radiators, directive gain, effect of ground, impedance, antenna systems and arrays. Prerequisite: T-ELN 105. Corequisite: T-ELN 205.			
T-ELN 227 UHF and Microwave Systems	5	4	7
A study of UHF and VHF components, circuits, and measurement techniques. The use of distributed constant elements, waveguides and coaxial cables, microwave links, high frequency oscillators, magnetrons, klystrons, traveling wave tubes. An introduction to the use of the Smith Chart. Prerequisite: T-ELN 225.			
T-ELN 230 Television Systems	4	6	7
A study of the principles of television including the television system, camera tubes, scanning and synchronization, composite video signal, receiver circuits, transmitting equipment, color television, and closed-loop systems. Corequisite: ELN 214.			
T-ELN 235 Industrial Instrumentation	4	6	7
Broad introduction to use of industrial electro-mechanical and electronic circuits and equipment. Provides an understanding of the methods, techniques, and skills required			

	Class	Lab.	Credit
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for installation, service and operation of a variety of industrial control systems. Analysis of sensing devices for detecting changes in pressure, temperature, humidity, sound, light, electricity, the associated circuitry and indicating and recording devices. Prerequisites: T-ELN 205, T-PHY 104.

T-ELN 240 Digital Computers	3	0	3
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An exploration into the methodology of counting and computing. Various computer techniques will be investigated including: non sinusoidal waveforms, binary and decade counters, industrial counters, readout devices, logic circuits, arithmetic circuits, storage devices, input-output devices, computer control, analog and digital converters. Prerequisite: T-ELN 214.

T-ELN 245 Electronic Design Project	0	4	2
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Students are required to design and construct a project approved by the instructor. Includes selection of project, design, construction, and testing of completed project. Projects may include: AM or FM transmitters or receivers, amplifiers, test equipment, control devices, simple counters, lasers, masers, etc. Prerequisite: T-ELN 205.

ENGLISH

T-ENG 101 Grammar	3	0	3
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Designed to aid the student in the improvement of self-expression in grammar. The approach is functional with emphasis on grammar, diction, sentence structure, punctuation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life. Prerequisite: None.

T-ENG 102 Composition	3	0	3
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Designed to aid the student in the improvement of self-expression in business and technical composition. Emphasis is on the sentence, paragraph, and whole composition. Prerequisite: T-ENG 101.

T-ENG 103 Report Writing	3	0	3
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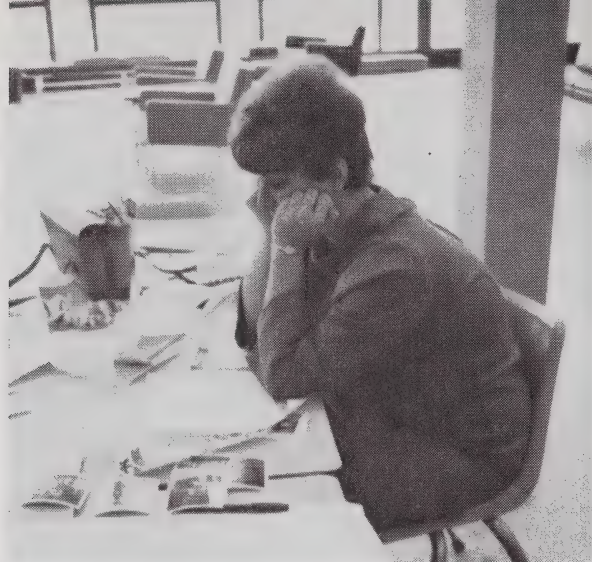
The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. This report must have to do with something in his chosen curriculum. Prerequisite: T-ENG 101.

T-ENG 104 Speed Reading	2	0	2
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Designed to improve the student's ability to read rapidly and accurately. Special machines are used for class drills to broaden the span of recognition, to increase eye coordination and word group recognition and to train for comprehension in larger units. Prerequisite: None.

T-ENG 204 Oral Communication	3	0	3
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A study of basic concepts and principles of oral communications to enable the student to communicate with others. Emphasis is placed on the speaker's attitude, improving diction, voice, and the application of particular techniques of theory to correct speaking



habits and to conducting meetings, conferences, and interviews. Prerequisite: T-ENG 101.

T-ENG 206 Business Communication	3	0	3
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Develops skills in techniques of writing business communications. Emphasis is placed on writing action—getting sales letters and prospectuses. Business reports, summaries of business conferences, letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry. Prerequisite: T-ENG 101.

T-ENG 208 Business English	3	0	3
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A course designed to improve the student's ability to use correct English, punctuation, and spelling in business applications. Includes a review of basic English grammar. Prerequisite: T-ENG 101.

ENG 1101 Reading Improvement	2	0	2
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Designed to improve the student's ability to read rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition and to train for comprehension in larger units. Prerequisite: None.

ENG 1102 Communication Skills	3	0	3
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Designed to promote effective communication through correct language usage in speaking and writing. Prerequisite: None.

FURNITURE

T-FUR 101 Introduction to the Furniture Industry	3	0	3
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(COURSE DESCRIPTION BEING REVISED)

T-FUR 102 Furniture Processes	3	3	4
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A comprehensive study of materials and methods of furniture manufacturing. Classification, characteristics, and uses of wood species, veneer and manufactured board processes and uses will be studied. Production wood working operations and methods using circular saws, jointer, planer, band saw, jig saw, drill press, lathe, shaper,

	Class	Lab.	Credit
router and portable hand tools will be explored. Wood joints, gluing processes, fasteners and assembly procedures will be included. Prerequisite: None.			
T-FUR 103 Furniture Processes	3	3	4
The preparation of woods, types of finishes and their application, equipment and processes will be studied. Procedures of joining wood and other commonly used materials and appliques are included. Forms of upholstery, equipment, materials and processes will be explored. Functional and decorative hardware and mechanisms will be studied. Prerequisite: T-FUR 102.			
T-FUR 104 Furniture Construction Techniques (COURSE DESCRIPTION BEING REVISED)	4	6	6
T-FUR 120 Lumber and Its Characteristics (COURSE DESCRIPTION BEING REVISED)	3	4	5
T-FUR 201 Assembly Methods and Techniques (COURSE DESCRIPTION BEING REVISED)	4	6	6
T-FUR 202 Finishing (COURSE DESCRIPTION BEING REVISED)	3	0	3
T-FUR 205 Machine Room Methods and Techniques (COURSE DESCRIPTION BEING REVISED)	4	6	6
T-FUR 220 Hardware and Trim (COURSE DESCRIPTION BEING REVISED)	3	0	3
T-FUR 221 Types of Furniture (COURSE DESCRIPTION BEING REVISED)	3	0	3
T-FUR 247 Research Problem (COURSE DESCRIPTION BEING REVISED)	2	3	3

INDUSTRIAL SCIENCE

T-ISC 201 Industrial Organization and Management	3	0	3
Organizational structure for industrial management; operational and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training and supervision of personnel as found in typical industrial organizations. Prerequisite: None.			
T-ISC 211 Cost Analysis (COURSE DESCRIPTION BEING REVISED)	3	0	3
T-ISC 214 Production Scheduling (COURSE DESCRIPTION BEING REVISED)	4	3	5
T-ISC 215 Plant and Production Planning	3	2	4
Principles of plant planning dealing with equipment placement for production flow, versatility and optimum effectiveness. In-plant and inter-plant traffic, routing, and communications will be studied. Prerequisite: None.			

	Class	Lab.	Credit
T-ISC 216 Product Development	3	0	3
This course of study is to familiarize the student with product development as it relates to the complete manufacturing organization. The evolution from original idea to retailer involving sales, design and engineering, cost, plant production, shipping, and outside agencies. Prerequisite: None.			
T-ISC 221 Quality Control	4	2	5
(COURSE DESCRIPTION BEING REVISED)			

MATHEMATICS

T-MAT 101 Technical Mathematics	5	0	5
The real number system is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed. Prerequisite: Satisfactory evidence that admission requirements have been met.			
T-MAT 102 Technical Mathematics	5	0	5
A continuation of T-MAT 101. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: T-MAT 101.			
T-MAT 103 Technical Mathematics	5	0	5
The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: T-MAT 102.			
T-MAT 110 Business Mathematics	5	0	5
This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business. Prerequisite: None.			
T-MAT 201 Technical Mathematics	5	0	5
A continuation of T-MAT 103. More advanced concepts of differentiation and integration are considered. Included are graphs and derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration techniques, polar equations, parametric equations, and Fourier series. Prerequisite: T-MAT 103.			
T-MAT 202 Calculus and Laplace Transforms For Electronics	5	0	5
An investigation of the methods of calculus which are of the most direct use in the study of electronic circuits. Introduction to selected topics from differential equations and Laplace transforms and applications of these methods to the solution of electronic circuit problems. Prerequisite: T-MAT 201. Corequisite: T-ELN 214.			
MAT 1101 Fundamentals of Mathematics	5	0	5
Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and propor-			

tion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth. Prerequisite: None.

	Class	Lab.	Credit
MAT 1103 Geometry	3	0	3

Fundamental properties and definitions; plane and solid geometric figures, selected general theorems, geometric construction of lines, angles and plane figures. Dihedral angles, areas of plane figures, volumes of solids. Geometric principles are applied to shop operations. Prerequisite: None.

MAT 1104 Trigonometry	3	0	3
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Trigonometric ratios; solving problems with right triangles, using tables, and interpolating; solution of oblique triangles using law of sines and law of cosines; graphs of the trigonometric functions; inverse functions, trigonometric equations. All topics are applied to practical problems. Prerequisite: MAT 1103.

MAT 1115 Electrical Mathematics I	5	0	5
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A study of fundamental concepts of algebra; basic operations of addition, subtraction, multiplication, and division; solution of first order equations, use of letters and signs, grouping, factoring, exponents, ratios, and proportions; solution of equations, algebraically and graphically; a study of logarithms and use of tables; and introduction to trigonometric functions and their application to right angles; and a study of vectors for use in alternating current. Prerequisite: None.

MAT 1116 Electrical Mathematics II	5	0	5
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A working knowledge of the powers of 10, Ohm's Law for series and parallel circuits, quadratic equations, Kirchhoff's Laws, trigonometric functions, plane vectors, alternating currents, vector algebra and logarithms. Prerequisite: MAT 1115.

MAT 1123 Machinist Mathematics	3	0	3
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Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems. Prerequisite: MAT 1104.

MECHANICAL

T-MEC 101 Machine Processes	2	4	3
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An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes of our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming. Prerequisite: None.

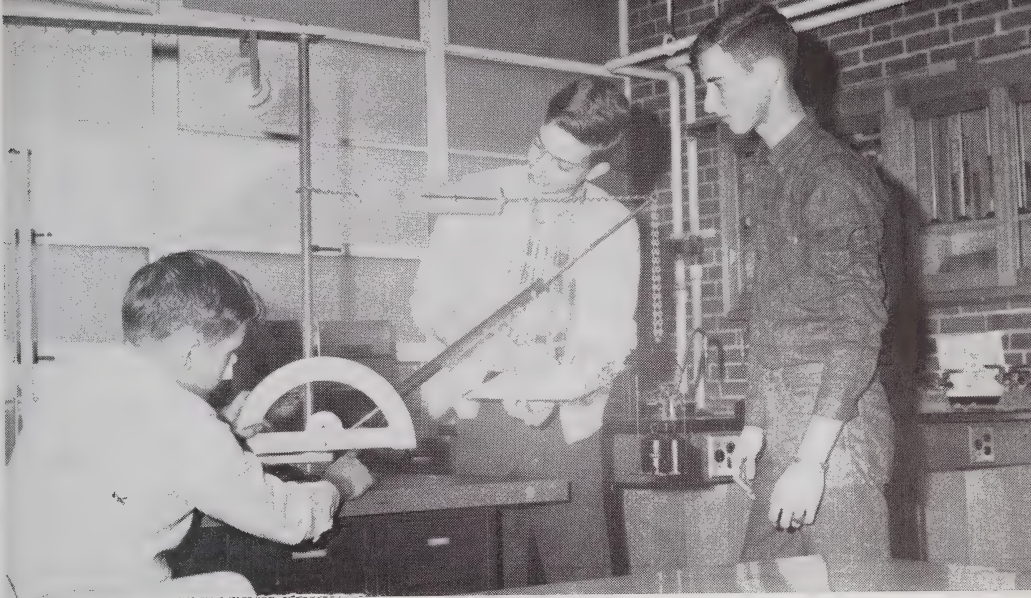
T-MEC 102 Machine Processes	2	4	3
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Advanced operations on lathe, drilling, boring and reaming machines. Milling machine theory and practice. Thorough study of the types of milling machines, cutters, jig and fixture devices, and the accessories used in a modern industrial plant. Safety in the operational shop is stressed. Prerequisite: T-MEC 101.

T-MEC 110 Fundamental Mechanisms	2	4	4
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A study of the purpose and actions of cams, cables, gear trains, differentials, screws, belts, pulleys, shafts, levers, and other mechanical devices used to transmit or control signals. Prerequisite: T-PHY 102.

	Class	Lab.	Credit
T-MEC 205 Strength of Materials	3	2	4
Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such as static, impact, varying and dynamic. Analyses of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components. Prerequisites: T-PHY 106, T-MAT 103.			
T-MEC 210 Physical Metallurgy	3	3	4
Introductory course in metallurgy, a basic study of the properties of metals and alloys. Analysis of the structure of metals and alloys, atomic structure, nuclear structure, and nuclear reactions. Solid (crystalline) structures, methods of designating crystal planes; liquid and vapor phases; phase diagrams; and alloy systems. Prerequisite: T-PHY 101.			
T-MEC 211 Physical Metallurgy	3	3	4
Properties of metals and alloys, the reactions of metals, diffusion, carburizing, metal bonding and homogenization; recrystallization and grain growth, age hardening, nitriding, internal oxidation; heat treatment of steel; laboratory experiments and demonstrations. Prerequisite: T-MEC 210.			
T-MEC 235 Hydraulics and Pneumatics	3	3	4
The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electro-hydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs. Prerequisite: T-PHY 102.			
T-MEC 237 Control Systems	2	4	4
Hydraulic, pneumatic, mechanical, electrical and electronic control systems and components. Basic description, analysis and explanation of operation. Typical performance characteristics, limitations on performance, accuracy, applications and their utilization in industrial processes. Prerequisite: T-PHY 103.			
MEC 1101 Machine Shop Theory & Practice	3	12	7
An introduction to the machinist trade and the potential it holds for craftsmen. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice. Prerequisite: None.			
MEC 1102 Machine Shop Theory & Practice	3	12	7
Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course. Prerequisite: MEC 1101.			
MEC 1103 Machine Shop Theory & Practice	3	12	7
Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculating, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder. Prerequisite: MEC 1102.			



	Class	Lab.	Credit
MEC 1104 Machine Shop Theory & Practice	3	12	7
Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry. Prerequisite: MEC 1103.			

MEC 1115 Treatment of Ferrous Metals	2	3	3
Investigates the properties of ferrous metals and tests to determine their uses. Instructions will include some chemical metallurgy to provide a background for the understanding of the physical changes and causes of these changes in metals. Physical metallurgy of ferrous metals, producing iron and steel, theory of alloys, shaping and forming, heat treatment for steel, surface treatments, alloy of special steel, classification of steels, and cast iron will be topics for study. Prerequisite: None.			

MEC 1116 Treatment of Non-Ferrous Metals	2	3	3
Continuation of the study of physical metallurgy. The non-ferrous metals: bearing metals (brass, bronze, lead), light metals (aluminum and magnesium), and copper and its alloys are studied. Powder metallurgy, titanium, zirconium, indium and vanadium are included in this course. Prerequisite: MEC 1115.			

NURSING

	Class	Lab.	Clinical	Credit
PNE 1101 Fundamentals of Practical Nursing	9	4	3	12
Designed to assist the beginning Practical Nurse student in acquiring knowledge basic to the development of skills needed for safe and effective bedside nursing care of patients in a state of dependency due to health deviation. Body mechanics for nurse and patient. Laboratory practice in daily hygienic care of patients' medical and surgical aseptic needs. Prerequisite: None.				
PNE 1102 Anatomy and Physiology	5	0	0	5
A study of the general plan of the human body and the nine systems. Designed for				



	Class	Lab.	Credit
understanding how the body functions, moves and stands erect, distributes food and oxygen and removes waste and provides for survival. Prerequisite: None.			
PNE 1103 Nutrition	2	0	0
Designed to give knowledge of the basic principles of nutrition for the nurse and patient. Also involves mechanics of digestion, absorption and metabolism, nutritional requirements for all age groups, and as modified by religion or culture. Prerequisite: None.	2	0	2
PNE 1104 Growth and Development	2	0	0
Designed to aim at a beginning understanding of self as a prerequisite for understanding the patient and his family. Presents the normal growth and development from birth to old age. Presents physical changes which occur with age as well as mental and personality changes. Prerequisite: None.	2	0	2
PNE 1105 Vocational Adjustments I	1	0	0
Designed to acquaint the Practical Nurse student with her role as a student. Presents philosophy and objectives of the program. Brief background of history of nursing and the scope of modern nursing. Prerequisite: None.	1	0	1
PNE 1106 Medical—Surgical Nursing I	7	2	0
Designed to give the student material basic to the beginning understanding of the nursing care of patients with common problems presented by illness. Processes of illness, diagnostic tests, physiologic reaction to pain, needs of patients with long term illnesses, rehabilitation, pre and post operative needs, anesthesia agents, and modification of diet for disease condition. Prerequisites: PNE 1101, 1102, 1103, 1104, 1105.	7	2	8
PNE 1107 Maternity Nursing I	2	0	0
Presentation of modern aspects of maternity nursing with emphasis on normal pregnancy—antepartal care, labor and post-partal nursing needs and care of normal newborn. Prerequisites: PNE 1101, 1102, 1103, 1104, 1105.	2	0	2
PNE 1108 Pediatric Nursing I	3	0	0
Presents the effect of a common or sub-acute illness of the child and the nursing needs which arise from hospitalization. Prerequisites: PNE 1101, 1102, 1103, 1104, 1105.	3	0	3
PNE 1109 Clinical Experiences I	0	0	21
Beginning experiences in general hospital with opportunity to practice skills learned in the laboratory and understanding of role on the nursing team. Prerequisites: PNE 1101, 1102, 1103, 1104, 1105.	0	0	7
PNE 1110 Medical Surgical Nursing II	5	0	0
Designed to develop knowledge of common disorders of body systems, the nursing	5	0	5

	Class	Lab.	Credit
care, socio-psychological implications. Included are the disorders of the circulatory system and respiratory system. Prerequisite: PNE 1106.			
PNE 1111 Maternity Nursing II	2	2	0
Designed to present selected abnormal conditions presented by the maternity patient and the newborn with emphasis on the role as an assistant to the Registered Nurse. Prerequisite: PNE 1107.			
PNE 1112 Pediatric Nursing II	2	0	0
Presents the seriously ill child with emphasis on his needs and the needs of the parents. Emphasis is placed on the assistant role and/or the role of the Practical Nurse on the health team. Prerequisite: PNE 1108.			
PNE 1113 Pharmacology	1	0	0
Designed to present knowledge of sources of drugs, the classification and uses. Develop in the laboratory skills in giving oral drugs. Develop knowledge of equipment and sterilization techniques used in the preparation and giving of injections; insulin therapy. Prerequisite: PNE 1106.			
PNE 1114 Clinical Experience II	0	0	24
Further experience in basic areas of medical, surgical, pediatric, or obstetric nursing. Emphasis on observation of signs and symptoms and assuming responsibility in reporting to head nurse. Prerequisite: PNE 1109.			
PNE 1115 Medical—Surgical Nursing III	8	0	0
Continue the study of the nursing needs of patients with disorders affecting the systems: Gastro-Intestinal, Muscular-Skeletal, Nervous, including eyes, ears, nose, and throat, endocrine, urinary and integumentary. Disaster and emergency nursing are also included. Prerequisite: PNE 1110.			
PNE 1116 Vocational Adjustments II	2	0	0
Designed to present further nursing ethics, medical-legal aspects of Practical Nursing and a study of the organizations for the graduate Practical Nurse. Prerequisite: PNE 1110.			
PNE 1117 Clinical Experience III	0	0	24
Continued experience in medical-surgical, pediatric and maternity nursing with emphasis on the role as an assistant to the professional nurse in caring for the seriously ill patient. All experience in the clinical area is under the supervision of the clinical teacher. Prerequisite: PNE 1114.			

PHYSICS

	Class	Lab.	Credit
T-PHY 101 Physics: Work, Energy, Power	3	2	4
Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisite: None.			
T-PHY 102 Physics: Properties of Matter	3	2	4
A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids at rest and in motion, gas laws and applica-			

	Class	Lab.	Credit
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tions. Laboratory experiments and specialized problems dealing with these topics are part of this course. Prerequisite: T-PHY 101.

T-PHY 103 Physics: Electricity	3	2	4
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Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisites: T-MAT 101, T-PHY 101.

T-PHY 104 Physics: Light and Sound	3	2	4
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A survey of the concepts involving wave motion leads to a study of sound, its generation, transmission and detection. The principles of wave motion also serve as an introduction to a study of light, illumination and the principles involved in optical instruments. Application is stressed throughout. Prerequisites: T-MAT 101, T-PHY 101.

T-PHY 106 Applied Mechanics	5	0	5
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Concepts and principles of statics and dynamics. Parallel concurrent and noncurrent force systems in coplanar and noncoplanar situations. Concepts of centroids and center of gravity, moments of inertia, fundamentals of kinetics, and kinematics of velocity and motion. Prerequisites: T-MAT 103, T-PHY 101.

PHY 1101 Applied Science	3	2	4
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An introduction to physical principles and their application in industry. Topics in this course include measurement; properties of solids, liquids, and gases; basic electrical principles. Prerequisite: None.

PHY 1102 Applied Science	3	2	4
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The second in a series of two courses of applied physical principles. Topics introduced in this course are heat and thermometry, and principles of force, motion, work, energy, and power. Prerequisite: None.

PSYCHOLOGY

T-PSY 112 Personality Development	3	0	3
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Designed to help the student recognize the importance of the physical, intellectual, social, and emotional dimensions of personality. Emphasis is placed on grooming and methods of personality improvement. Prerequisite: None.

T-PSY 206 Applied Psychology	3	0	3
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A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community. Prerequisite: None.

PSY 1101 Human Relations	3	0	3
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A study of basic principles of human behavior. The problems of the individual are studied in relation to society, group membership, and relationships within the work situation. Prerequisite: None.

SOCIAL SCIENCE

	Class	Lab.	Credit
T-SSC 201 Social Science	3	0	3
An integrated course in the social sciences, drawing from the fields of anthropology, psychology, history, and sociology. Prerequisite: None.			
T-SSC 202 Social Science	3	0	3
A further study of social sciences with emphasis on economics, political science, and social problems as they relate to the individual. Prerequisite: T-SSC 201.			
T-SSC 205 American Institutions	3	0	3
A study of the effect of American social, economic, and political institutions upon the individual as a citizen and as a worker. The course dwells upon current local, national, and global problems, viewed in the light of our political and economic heritage. Prerequisite: None.			
T-SSC 207 Rural Society	3	0	3
A study of selected elements of rural sociology with emphasis on current social changes. The course provides a sociological background for the understanding of rural social changes. Areas of study include rural culture, group relationships, social classes, rural and suburban communities, farm organizations, the communication of agricultural technology, rural social problems, agricultural adjustment and population change. Prerequisite: None.			
T-SSC 208 Marriage and the Family	3	0	3
Social, psychological and economic problems of the family in the United States. A study of contemporary American family patterns, emphasizing the problems of personality development, courtship, and marital adjustment. Prerequisite: None.			
T-SSC 209 United States Government	3	0	3
A study of government with emphasis on basic concepts, structure, powers, procedures and problems. Prerequisite: None.			

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A.B., Lenoir Rhyne College; Specialized Training, University of North Carolina at Charlotte, Kings Business College.

Roger Neil Brookshire, *Business Administration*

B.S., East Carolina University; Graduate Study, University of North Carolina at Chapel Hill.

Richard Cobb, *Agricultural Business*

A.A.Sc., St. Petersburg Jr. College; B.S., University of Florida; M.S., New Mexico State University.

Pauline Coble, *Upholstery*

College Extension Division of North Carolina State University.

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A.B., Emory University; M.Ed., Duke University; Graduate Study, New York University, Rutgers University, Stevens Institute of Technology, North Carolina State University, University of South Carolina, University of Alabama, Appalachian State University.

Margaret Edwards, *Learning Lab Coordinator*

A.B., Lenoir Rhyne College; M.A., Appalachian State University.

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A.B., Lenoir Rhyne College; Graduate Study, Appalachian State University, Converse College; NDEA Foreign Language Fellowship, University of Wichita.

Bernard C. Gray, *Traffic and Transportation*

B.S., B.A., University of Florida.

Clay Groves, *Electronics*

Capital Radio Institute, College Extension Division of North Carolina State University.

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B.S., South Dakota School of Mines and Technology; Graduate Study, New York State University at Buffalo.

Jessie Ray Hall, *Business Administration*

B.S., M.S., Virginia Polytechnic Institute; Graduate Study, American Institute of Banking, University of Virginia, North Carolina State University, Madison College.

Richard Harwell, *English*

B.A., Lenoir Rhyne College; Graduate Study, Appalachian State University; Specialized Training, Cleveland Institute of Electronics.

John Hemmings, *Data Processing*

Appalachian State University, New Brunswick IBM College, Rutgers University, IBM Educational School.

Anne Louise Huffman, *English*

B.A., University of North Carolina at Chapel Hill; Graduate Study, Trinity College, Appalachian State University, Colorado State University, University of North Carolina at Chapel Hill.

Norman Lackey, *Electrical Installation and Maintenance*

Coyne Electrical School, North Carolina State University, Pacific International University, University of North Carolina at Greensboro.

George T. McLeod, *Automotive*

Nashville Automotive and Diesel College; General Motors Automotive and Air Conditioning Training School; Transcold Training School.

Eugene Pearson, *Business Administration*

B.A., Vanderbilt University; M.A., University of Kentucky; Graduate Study, University of Chicago.

John Poropatic, *Machine Shop*

Stout State University, North Carolina State University Summer Institute, University of Illinois.

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A.B., Lenoir Rhyne College; M.A., University of Wyoming.

H. Thomas Robins, *Mechanical Drafting*

B.S., Duke University; Graduate Study, Appalachian State University.

David M. Rosin, *Business Administration*

B.S., Indiana University; M.A., Ball State University.

Kenneth W. Ross, *Furniture Drafting*

B.S., North Carolina State University; Graduate Study, Appalachian State University.

Dario Santi, *Architectural Drafting*

B.A., Catholic University of America; M.A., Pratt Institute; Graduate Study, Hofstra University.

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A.B., Lenoir Rhyne College; L.L.B., Atlanta Law School.

David Smith, *Business*

B.S., M.A., Appalachian State University; Specialized Training, IBM Training Center; Graduate Study, Appalachian State University.

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B.S., Appalachian State University.

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A.B., Lenoir Rhyne College; M.A., Appalachian State University.

Thomas E. Winn, *Upholstery*

College Extension Division of North Carolina State University.

Gordon A. Yount, *Physics and Mathematics*

B.S., Lenoir Rhyne College; M.A., University of North Carolina at Chapel Hill; Graduate Study, Texas Instruments, Inc.

Louise Yount, R.N., *Practical Nursing*

B.A., Lenoir Rhyne College; James Walker Memorial Hospital School of Nursing; Graduate Study, University of North Carolina at Chapel Hill, Catholic University, North Carolina State University.

Paul Yount, *Automotive*

State Diploma in Automotive Mechanics, Catawba Valley Technical Institute.

ACADEMIC CALENDAR

1968-69

FALL QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Fall Quarter

September 5, 6, 1968
September 9
September 9
September 13
November 22

WINTER QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Winter Quarter

December 2, 3, 1968
December 4
December 4
December 10
February 28

SPRING QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Spring Quarter

March 6, 7, 1969
March 10
March 10
March 17
May 27

SUMMER QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Summer Quarter

June 2
June 4
June 4
June 11
August 20

HOLIDAYS

Thanksgiving Holidays
Christmas Holidays
Easter Holidays
Independence Day

November 28, 29, 1968
December 23-January 1
Good Friday, April 4, 1969
Easter Monday, April 7, 1969
July 4, 1969

1968

JANUARY	FEBRUARY	MARCH
SMTWTFS	SMTWTFS	SMTWTFS
-- 1 2 3 4 5 6	-- -- -- 1 2 3	-- -- -- -- 1 2
7 8 9 10 11 12 13	4 5 6 7 8 9 10	3 4 5 6 7 8 9
14 15 16 17 18 19 20	11 12 13 14 15 16 17	10 11 12 13 14 15 16
21 22 23 24 25 26 27	18 19 20 21 22 23 24	17 18 19 20 21 22 23
28 29 30 31 -- -- --	25 26 27 28 29 -- --	24 25 26 27 28 29 30
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APRIL	MAY	JUNE
SMTWTFS	SMTWTFS	SMTWTFS
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7 8 9 10 11 12 13	5 6 7 8 9 10 11	2 3 4 5 6 7 8
14 15 16 17 18 19 20	12 13 14 15 16 17 18	9 10 11 12 13 14 15
21 22 23 24 25 26 27	19 20 21 22 23 24 25	16 17 18 19 20 21 22
28 29 30 -- -- --	26 27 28 29 30 31 --	23 24 25 26 27 28 29
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JULY	AUGUST	SEPTEMBER
SMTWTFS	SMTWTFS	SMTWTFS
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7 8 9 10 11 12 13	4 5 6 7 8 9 10	8 9 10 11 12 13 14
14 15 16 17 18 19 20	11 12 13 14 15 16 17	15 16 17 18 19 20 21
21 22 23 24 25 26 27	18 19 20 21 22 23 24	22 23 24 25 26 27 28
28 29 30 31 -- --	25 26 27 28 29 30 31	29 30 -- -- -- --
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OCTOBER	NOVEMBER	DECEMBER
SMTWTFS	SMTWTFS	SMTWTFS
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6 7 8 9 10 11 12	3 4 5 6 7 8 9	8 9 10 11 12 13 14
13 14 15 16 17 18 19	10 11 12 13 14 15 16	15 16 17 18 19 20 21
20 21 22 23 24 25 26	17 18 19 20 21 22 23	22 23 24 25 26 27 28
27 28 29 30 31 --	24 25 26 27 28 29 30	29 30 31 -- -- --
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1969

JANUARY	FEBRUARY	MARCH
SMTWTFS	SMTWTFS	SMTWTFS
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5 6 7 8 9 10 11	2 3 4 5 6 7 8	2 3 4 5 6 7 8
12 13 14 15 16 17 18	9 10 11 12 13 14 15	9 10 11 12 13 14 15
19 20 21 22 23 24 25	16 17 18 19 20 21 22	16 17 18 19 20 21 22
26 27 28 29 30 31 --	23 24 25 26 27 28 --	23 24 25 26 27 28 29
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APRIL	MAY	JUNE
SMTWTFS	SMTWTFS	SMTWTFS
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6 7 8 9 10 11 12	4 5 6 7 8 9 10	8 9 10 11 12 13 14
13 14 15 16 17 18 19	11 12 13 14 15 16 17	15 16 17 18 19 20 21
20 21 22 23 24 25 26	18 19 20 21 22 23 24	22 23 24 25 26 27 28
27 28 29 30 -- --	25 26 27 28 29 30 31	29 30 -- -- -- --
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JULY	AUGUST	SEPTEMBER
SMTWTFS	SMTWTFS	SMTWTFS
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6 7 8 9 10 11 12	3 4 5 6 7 8 9	7 8 9 10 11 12 13
13 14 15 16 17 18 19	10 11 12 13 14 15 16	14 15 16 17 18 19 20
20 21 22 23 24 25 26	17 18 19 20 21 22 23	21 22 23 24 25 26 27
27 28 29 30 31 --	24 25 26 27 28 29 30	28 29 30 -- -- --
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OCTOBER	NOVEMBER	DECEMBER
SMTWTFS	SMTWTFS	SMTWTFS
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5 6 7 8 9 10 11	2 3 4 5 6 7 8	7 8 9 10 11 12 13
12 13 14 15 16 17 18	9 10 11 12 13 14 15	14 15 16 17 18 19 20
19 20 21 22 23 24 25	16 17 18 19 20 21 22	21 22 23 24 25 26 27
26 27 28 29 30 31 --	23 24 25 26 27 28 29	28 29 30 31 -- --
-- -- -- -- -- --	30 -- -- -- -- --	-- -- -- -- -- --

ACADEMIC CALENDAR 1969-70

FALL QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Fall Quarter

September 4, 5, 1969
September 8
September 8
September 12
November 21

WINTER QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Winter Quarter

December 1, 2, 1969
December 3
December 3
December 9
March 3, 1970

SPRING QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Spring Quarter

March 5, 6, 1970
March 9
March 9
March 16
May 26

SUMMER QUARTER

Registration
Day Classes Begin
Night Classes Begin
Last Day of Registration
End of Summer Quarter

June 1, 1970
June 3
June 3
June 10
August 19

HOLIDAYS

Thanksgiving Holidays
Christmas Holidays
Easter Holidays
Independence Day

November 27, 28, 1969
December 22-January 2
Good Friday, April 3, 1970
Easter Monday, April 6, 1970
July 4, 1970

1969

JANUARY	FEBRUARY	MARCH
SMTWTFS	SMTWTFS	SMTWTFS
-- -- -- 1 2 3 4	-- -- -- -- 1	-- -- -- -- 1
5 6 7 8 9 10 11	2 3 4 5 6 7 8	2 3 4 5 6 7 8
12 13 14 15 16 17 18	9 10 11 12 13 14 15	9 10 11 12 13 14 15
19 20 21 22 23 24 25	16 17 18 19 20 21 22	16 17 18 19 20 21 22
26 27 28 29 30 31 --	23 24 25 26 27 28 --	23 24 25 26 27 28 29
		30 31 -- -- -- --
APRIL	MAY	JUNE
SMTWTFS	SMTWTFS	SMTWTFS
-- -- 1 2 3 4 5	-- -- -- -- 1 2 3	1 2 3 4 5 6 7
6 7 8 9 10 11 12	4 5 6 7 8 9 10	8 9 10 11 12 13 14
13 14 15 16 17 18 19	11 12 13 14 15 16 17	15 16 17 18 19 20 21
20 21 22 23 24 25 26	18 19 20 21 22 23 24	22 23 24 25 26 27 28
27 28 29 30 -- --	25 26 27 28 29 30 31	29 30 -- -- -- --
JULY	AUGUST	SEPTEMBER
SMTWTFS	SMTWTFS	SMTWTFS
-- -- 1 2 3 4 5	-- -- -- -- 1 2	-- 1 2 3 4 5 6
6 7 8 9 10 11 12	3 4 5 6 7 8 9	7 8 9 10 11 12 13
13 14 15 16 17 18 19	10 11 12 13 14 15 16	14 15 16 17 18 19 20
20 21 22 23 24 25 26	17 18 19 20 21 22 23	21 22 23 24 25 26 27
27 28 29 30 31 --	24 25 26 27 28 29 30	28 29 30 31 -- --
	31 -- -- -- --	
OCTOBER	NOVEMBER	DECEMBER
SMTWTFS	SMTWTFS	SMTWTFS
-- -- -- 1 2 3 4	-- -- -- -- 1	-- 1 2 3 4 5 6
5 6 7 8 9 10 11	2 3 4 5 6 7 8	7 8 9 10 11 12 13
12 13 14 15 16 17 18	9 10 11 12 13 14 15	14 15 16 17 18 19 20
19 20 21 22 23 24 25	16 17 18 19 20 21 22	21 22 23 24 25 26 27
26 27 28 29 30 31 --	23 24 25 26 27 28 29	28 29 30 31 -- --
	30 -- -- -- --	

1970

JANUARY	FEBRUARY	MARCH
SMTWTFS	SMTWTFS	SMTWTFS
-- -- -- -- 1 2 3	1 2 3 4 5 6 7	1 2 3 4 5 6 7
4 5 6 7 8 9 10	8 9 10 11 12 13 14	8 9 10 11 12 13 14
11 12 13 14 15 16 17	15 16 17 18 19 20 21	15 16 17 18 19 20 21
18 19 20 21 22 23 24	22 23 24 25 26 27 28	22 23 24 25 26 27 28
25 26 27 28 29 30 31	-- -- -- -- --	29 30 31 -- -- --
APRIL	MAY	JUNE
SMTWTFS	SMTWTFS	SMTWTFS
-- -- -- 1 2 3 4	-- -- -- -- 1 2	-- 1 2 3 4 5 6
5 6 7 8 9 10 11	3 4 5 6 7 8 9	7 8 9 10 11 12 13
12 13 14 15 16 17 18	10 11 12 13 14 15 16	14 15 16 17 18 19 20
19 20 21 22 23 24 25	17 18 19 20 21 22 23	21 22 23 24 25 26 27
26 27 28 29 30 --	24 25 26 27 28 29 30	28 29 30 -- -- --
	31 -- -- -- --	
JULY	AUGUST	SEPTEMBER
SMTWTFS	SMTWTFS	SMTWTFS
-- -- -- 1 2 3 4	-- -- -- -- 1	-- -- 1 2 3 4 5
5 6 7 8 9 10 11	2 3 4 5 6 7 8	6 7 8 9 10 11 12
12 13 14 15 16 17 18	9 10 11 12 13 14 15	13 14 15 16 17 18 19
19 20 21 22 23 24 25	16 17 18 19 20 21 22	20 21 22 23 24 25 26
26 27 28 29 30 31 --	23 24 25 26 27 28 29	27 28 29 30 -- --
	30 31 -- -- --	
OCTOBER	NOVEMBER	DECEMBER
SMTWTFS	SMTWTFS	SMTWTFS
-- -- -- 1 2 3 4	1 2 3 4 5 6 7	-- 1 2 3 4 5
5 6 7 8 9 10 11	8 9 10 11 12 13 14	6 7 8 9 10 11 12
12 13 14 15 16 17 18	15 16 17 18 19 20 21	13 14 15 16 17 18 19
19 20 21 22 23 24	22 23 24 25 26 27 28	20 21 22 23 24 25 26
25 26 27 28 29 30 31	29 30 -- -- --	27 28 29 30 31 --

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A
DECADE
OF
EDUCATIONAL
GROWTH

ROBERT E. PAAP, PRESIDENT




A DECADE OF EDUCATIONAL GROWTH

The Catawba Valley Technical Institute is on the threshold of completing a decade of educational service to the citizens of the Catawba Valley area. Throughout the decade of service, Catawba Valley Technical Institute has grown in depth and service ever mindful of the citizens' needs. Programs of education have been conducted to meet the people's needs, taking into account the student as an individual, his desires, and ambitions as a citizen, coupled with a quality program and highly competent staff to present a variety of quality educational programs. Upon this premise Catawba Valley Technical Institute has had phenomenal growth and earned a reputation as a quality institution beyond the expectations of our founding fathers.

The next decade and future decades will bear fruits beyond imagination as the citizens of the Catawba Valley area and the institution explore, develop and implement an even more comprehensive program of services to serve the needs of our people.

To this end we pledge and dedicate our time and efforts to the future.

A handwritten signature in black ink, reading "Robert E. Paap". The signature is written in a cursive style with a large, looped initial "R".



CATAWBA VALLEY TECHNICAL INSTITUTE
HICKORY, NORTH CAROLINA 28601

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GENERAL INFORMATION

INSTITUTIONAL PURPOSE

The Catawba Valley Technical Institute was created and established by the people of Catawba County and the State Board of Education as an institution to bridge the educational gap between the high school and the college offering various programs of occupational, adult, and extension education.

The Catawba Valley Technical Institute will maintain an Open Door policy. Students will be provided with the opportunity to pursue educational goals that will benefit the student. The institution shall provide courses or programs to meet the individual needs of the prospective students and follow a course of action that will provide ways and means of helping all persons in achieving their educational goals. Concurrent to the Open Door policy, it is also the purpose of Catawba Valley Technical Institute to present a program or programs of instruction that are of quality and dignity to the student.

Since the origin of the institute in 1960, it has been the purpose of the Catawba Valley Technical Institute to provide educational training based jointly on the needs of the citizens, business and industry. To accomplish this goal, programs have been established as follows:

1. Technical Education. 2. Vocational Education. 3. Adult Education, (a) Basic Adult, (b) Adult High School, (c) Cultural. 4. Extension. 5. Supervisory. 6. Firemanship. 7. Health.

HISTORY

Catawba Valley Technical Institute, the ninth Industrial Education Center in North Carolina, is a state-county supported co-educational institution. It has served as a model for other Institutes throughout North Carolina and the surrounding states.





Ground was broken for CVTI in the fall of 1959 and construction was completed on the 40,000 square foot building in August, 1960. The ultra-modern building, one of the most efficient and complete in the state, represents an initial investment of approximately \$500,000.

Under the direction of President Robert Paap, the new building was placed in operation in September, 1960. From an initial enrollment of seventy-five (75) students during the first quarter, the enrollment has soared to some 650 full-time students in curriculum programs and approximately 2000 students each quarter in part-time extension and adult programs.

The Institute, which began operation in 1960 as the Catawba County Industrial Education Center, was elevated to the present status of technical institute by the State Board of Education in January, 1964. Following the transition from an industrial education center to a technical institute, the philosophy of the Institute also experienced an important and rapid transition encompassing the open door policy and emphasis upon a quality, comprehensive educational program for every citizen of the area. It was during this transition that the Institute experienced great strides in: the development of programs for industry preparation; student enrollment; and general acceptance of the Institute by the Catawba Valley Area. In August, 1964, the new Institute, CVTI, offered its first Associate Degree in Applied Science (A.A. Sc.).

In February, 1966, construction began on a 25,000 square foot building expansion which was completed May, 1967. This expansion provided addi-

tional classrooms, a modern, spacious drafting complex, a more spacious library, a modern and spacious health services area, and a student center for the convenience of the student body and faculty.

At the present time, plans are being developed and initial steps have been taken to create additional physical facilities to include a furniture technology laboratory, a new business administration-data processing area, another physics laboratory, and additional classrooms.

LOCATION

Catawba Valley Tech, located about half-way between Hickory and Newton on Highways 64-70-321, is in Catawba County, North Carolina.

Situated in the heart of the Piedmont some 1,500 feet above sea level, CVTI is easily accessible over Interstate 40, Highways 321, 64, 70, and 127. It is within seven miles of a major airport and approximately 50 miles from metropolitan Charlotte and the famous Blue Ridge Mountains.

CAMPUS AND FACILITIES

The Catawba Valley Technical Institute campus covers forty acres fronting Highways 64-70-321, four miles east of Hickory. The present campus includes three permanent buildings and eight temporary structures for a total of more than 80,000 square feet of floor space. To meet the growing enrollments and to provide facilities for additional programs that will benefit the area, additional facilities are being planned.

The Catawba Valley Technical Institute consists of modern brick structures, most of which are air-conditioned. Contained is a 14,000 volume library for the use of both the students and public; a student center and food service area for leisure relaxation and entertainment; numerous classrooms and laboratories all of which are equipped with modern, up-to-date furniture and equipment.



CVTI maintains facilities to park 700 student vehicles, plus visitor parking accommodations. Parking facilities are located at three distinct areas to distribute student vehicles and thus minimize parking problems.

Additional facilities consist of a sheltered picnic area, basketball, volleyball, and badminton courts.

ACCREDITATION

CVTI is a member of the Department of Community Colleges of North Carolina. All programs offered by the Institute have been officially approved by the North Carolina State Board of Education; by the Veterans Administration; as well as by the North Carolina Department of Vocational Rehabilitation. The Practical Nursing Program is fully approved by the North Carolina Board of Nursing.

In seeking accreditation by a regional agency, Catawba Valley Technical Institute has taken initial steps and is a corresponding institution with the Southern Association of Colleges and Secondary Schools.



ADMISSIONS

GENERAL

In keeping with the philosophy of Catawba Valley Technical Institute and the Department of Community Colleges, current admissions procedures reflect the "Open Door" policy. Unlike most colleges, the Institute does not impose restrictive standards for admittance.

Admission to CVTI as a school is open to practically all individuals 18 years of age or older. With a series of programs covering basic adult education (grades 1 through 8), high school subjects leading to a high school diploma, pre-curriculum preparatory courses, as well as technical, business, and trade training, CVTI will admit all applicants to the school.

An applicant, however, may not necessarily be immediately admitted to the program of his or her choice. Selected requirements must be met prior to admission to a specific curriculum. Deficiencies can and must be made up prior to beginning the selected course of study. Deficiencies can be completed in courses available at CVTI. Thus, to some extent, quality can be retained in individual curricula and each applicant can be placed within a program in which he is capable of making satisfactory progress.

Before a student registers for a specific curriculum program, aptitude and placement tests are administered and counseling may be arranged. Thus an evaluation is made of the applicant's potential for success in the program of his choice.

NOTIFICATION OF ACCEPTANCE

Qualified applicants for each program will be accepted as admissions procedures are completed (on a first-come, first-served basis). Prospective students will be notified by letter of their acceptance immediately after all required information is received.



SPECIFIC PROCEDURES

ALL CURRICULUM PROGRAMS. Each applicant is responsible for fulfilling the following steps to admission in a pre-employment agricultural, business or engineering technology as well as a vocational trade program:

1. **APPLICATION.** Complete and submit with a \$10.00 deposit the standard application form (available from high school counselors or CVTI). The deposit is not refundable but will be applied to tuition fees the first quarter the applicant is enrolled, if within one year from the date the deposit is received.
2. **TESTS.** Complete the General Aptitude Test Battery administered by all North Carolina Employment Security Commission offices. Have the scores forwarded to Catawba Valley Technical Institute. (A battery of tests administered by the Institute may be substituted for the GATB.)
3. **TRANSCRIPTS.** Submit transcripts of high school and post-high school education to the Institute.
4. **INTERVIEW.** Schedule a personal interview with a member of Student Personnel Services staff.
5. **HEALTH REPORT.** Although information regarding the applicant's physical and mental health is provided on the application form, a medical examination may be required at the discretion of the Administration.

Upon receipt of the above information, data is thoroughly reviewed. If success appears possible and probable based upon (1) minimum aptitude test scores, (2) sufficient and compatible educational requirements, and (3) related personal information, the applicant is admitted to a selected course of study.

AGRICULTURAL TECHNOLOGY DIVISION. Requirements for admission to the agricultural programs include the steps listed under **SPECIFIC PROCEDURES**. If not a high school graduate, the candidate must possess a high school equivalency diploma (available at CVTI). High school courses in agriculture or related science are valuable to students in this division but are not required for admission.

ENGINEERING TECHNOLOGY DIVISION. Requirements for admission to a regular two-year engineering technology program include the specific procedures listed above. In addition, preference is given the applicant who:

1. Is a high school graduate. (This requirement may be met by satisfactorily obtaining a North Carolina High School Equivalency Certificate or by completing the Adult High School Program available at CVTI.)

2. Has High School credit or the equivalent for two units of mathematics, one of which is algebra.
3. Has one unit or the equivalent of science other than biology.

BUSINESS EDUCATION DIVISION. Requirements for admission to the business programs include the five steps listed under **SPECIFIC PROCEDURES** above. The applicant must also be a high school graduate. If not, the candidate must pass the North Carolina High School Equivalency Test or complete an Adult High School Program (available at CVTI).

DATA PROCESSING applicants must have completed one course in typing and/or be able to type a minimum of 30 words per minute.

VOCATIONAL DIVISION. Requirements for admission to the trade preparatory curriculums and vocational programs include the qualifications listed under **SPECIFIC PROCEDURES**. In addition, it is recommended but not required that the applicant have at least one year of algebra.

Practical Nursing applicants must be high school graduates, pass the North Carolina High School Equivalency Test, or complete an Adult High School Program (available at CVTI). In addition, such applicants must furnish references, complete a special battery of tests, and submit medical and dental examination reports.

ADULT EDUCATION PROGRAMS. See Page 67.

UPGRADING, EXTENSION, AND OTHER PROGRAMS. See Page 67.

TRANSFER

Catawba Valley Technical Institute will accept credits from all institutions within the Department of Community Colleges as well as from other accredited colleges, technical institutes, business and vocational schools. Course grades of "C" or better only will be accepted and such courses must parallel the content of CVTI courses.

AUDITING

By special permission, an applicant may be admitted to certain courses as an auditor. Such students will receive no credit for the course(s). Auditors will be expected to attend classes and participate in the same manner as credit students. Fees for the auditing student will be identical to those of students enrolling for credit.



FEES AND FINANCIAL AID

In keeping with its philosophy, Catawba Valley Technical Institute seeks to provide quality education and training at the lowest cost possible. Student tuition and fees cover only a minor part of the Institute's operating expenses. Additional monies required are obtained through tax funds from Catawba County, the State of North Carolina, as well as the Federal Government.

FEES

Tuition Per Quarter:

Full-time student	\$32.00
Part-time student (per quarter credit hour)	2.50
Student Activity (Annually)	12.00
Graduation	10.00
Transcript	1.00
Late Registration	5.00

For non-residents of the State of North Carolina tuition is two and one-half times the amounts listed above.

Inasmuch as costs are so inexpensive, CVTI does not provide for the installment payment of fees and charges.

No registration or tuition fees are charged students enrolling in Adult Education, Extension, Firemanship, or other special classes. Small charges in some instances, however, may be made for instructional materials and/or textbooks required in these classes.

OTHER EXPENSES. The cost of books, supplies, and equipment varies from one program of studies to another. Generally such costs will be from \$15.00 to \$40.00 per quarter.

COURSE CREDIT WITHHELD. No degree, diploma, certificate, or course credit will be granted, nor will a transcript be furnished a student until all financial obligations to the Institute, other than student loans, have been paid.

All previously incurred expenses and accounts, including library fines, must be fully paid before a student may re-enter at the beginning of any quarter.

REFUNDS. Catawba Valley Technical Institute follows the refund policy established by the Department of Community Colleges. Tuition refunds can be made only when the student is compelled to withdraw for unavoidable reasons. Under such circumstances, up to two-thirds of the student's quarterly tuition may be refunded, if official withdrawal is made within ten (10) calendar days after the beginning of the quarter. No refund will be made of the application deposit of \$10.00 unless the appli-

cant is refused admission to the program for which he applied.

Refunds for veterans will be made in accordance with the regulations of the Veterans Administration.

FINANCIAL AID

Student financial assistance in the form of scholarships and loans is increasing annually. Generally such aid is provided on the basis of need or scholarship or a combination of these factors.

Inquiries and requests for applications regarding SCHOLARSHIPS and/or LOANS should be directed to the Student Personnel Services Offices.

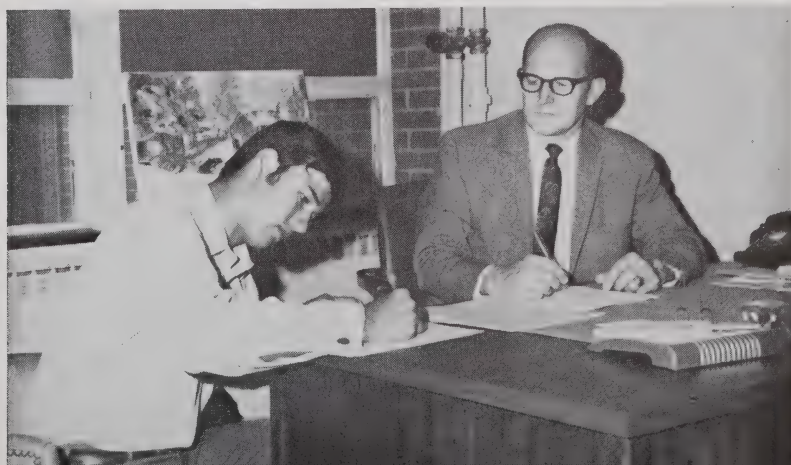
SECRETARIAL SCHOLARSHIPS. The Hickory Chapter of the National Secretaries Association has in the past annually awarded three scholarships valued at \$80 each. These awards are based upon scholarship, need, and recommendations.

CATAWBA VALLEY TECHNICAL INSTITUTE FACULTY GRANT-IN-AID. The Faculty of CVTI has made available a fund for providing grants-in-aid. Such grants are made on the basis of demonstrated financial need without consideration of scholastic standing.

HICKORY OPTIMIST SCHOLARSHIPS. The Hickory Optimist Club annually awards two scholarships valued at \$200 each. Given to male graduates of Claremont Central High School, the awards are based on scholarship and financial need.

VOCATIONAL REHABILITATION AID. By the act of the United States Congress, any physically handicapped student may be eligible for financial aid and for scholarship assistance. If a prospective student has any physical limitation, the nearest office of the North Carolina Department of Vocational Rehabilitation should be contacted. If the student prefers, the CVTI Student Personnel Office may be contacted.

VETERANS AND WAR ORPHANS. All curriculum programs offered by Catawba Valley Technical Institute are approved by the Veterans Ad-





ministration for enrollment by veterans and/or war orphans under Chapter 35, Title 38, United States Code.

Individuals who served in the Armed Forces since January 31, 1955, and who were honorably discharged may qualify for benefits under the Veterans Readjustment Benefits Acts of 1966—the “Cold War G.I. Bill.”

The length of training under Veterans Programs is determined by the length of active service while the amount of benefits is determined by the number of dependents and hours in school.

Interested individuals should contact their nearest Veterans Service office or CVTI for further information.

VOCATIONAL STUDENT LOAN FUND. Using funds donated by the North Carolina Consumer Finance Association, the State Board of Education established the Vocational Student Loan Program. Students who demonstrate financial need may borrow up to \$300 annually. The interest rate is only 3½% and repayment begins one year following graduation.

COLLEGE FOUNDATION, INC. Catawba Valley Technical Institute is a member of College Foundation, Inc. Through this corporation, students may borrow up to \$1,000 yearly. The interest rate varies up to 6%, depending upon the actual source of monies borrowed.

THE ETTA BURKE PTA STUDENT LOAN FUND. Available through the North Carolina Congress of Parents and Teachers, Inc., qualified students may borrow up to \$300 per year. Interest is only 3% and repayment begins six months after termination of formal education.

WORK-STUDY PROGRAM. Under this program, a limited number of students may be employed on a part-time basis by the Institute. To be eligible, an applicant must be less than 21 years of age and need the earnings to commence or continue training on a full-time basis.

STUDENT LIFE

STUDENT PERSONNEL SERVICES

Student Personnel Services are a distinct and vitally important aspect in the development, administration, operation, and future planning of Catawba Valley Technical Institute. Such services are provided, however, primarily to effectively serve the student.

A definite program of services is offered to assist the student in satisfactorily selecting, entering, progressing within, and completing a program of study. In addition, the individual is provided numerous opportunities for personal development and social growth through a variety of planned activities. The following services are available.

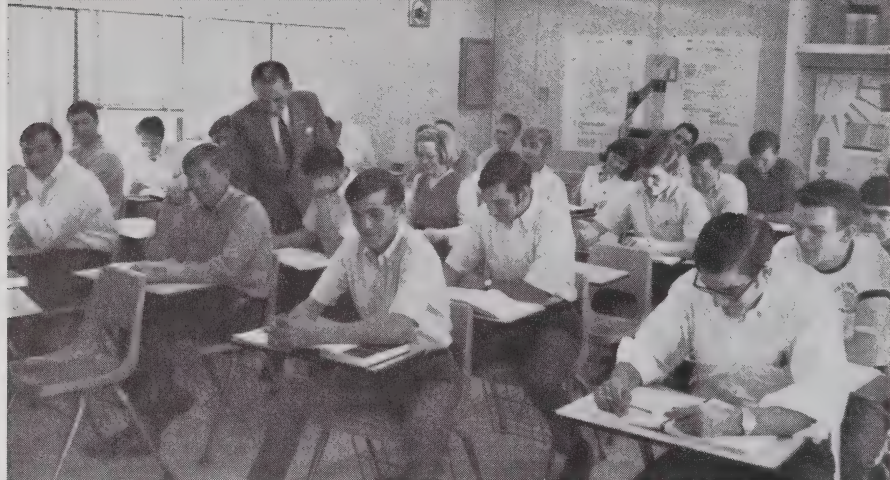
COUNSELING. CVTI provides a professional, competent, and continuing counseling program. The purpose of this program is to assist students in solving academic, vocational, personal, and socio-economic problems. It is felt that this service is most valuable when requested by the student. Therefore, students needing assistance should initiate contacts with the Student Personnel Office.

TESTING. Most CVTI applicants complete the General Aptitude Test Battery administered by the North Carolina Employment Security Commission. The Institute, however, provides an extensive program of aptitude, achievement, and individual testing at the school.

ORIENTATION. All students enrolling in the fall quarter participate in student orientation. This program is designed to acquaint the student with the CVTI environment, policies, courses, philosophy, staff, and other students. Assemblies, open discussions, lectures, and student handbooks help prepare the student for beginning studies at Catawba Valley Tech.

PLACEMENT. Assistance in locating employment is available to all CVTI students and graduates. Qualified students are referred to employers





contacting the Institute and the school provides facilities for employers desiring on-campus interviews.

Students are also urged to utilize the services of the Employment Security Commission which assists in job placement throughout the entire country.

HOUSING. Catawba Valley Technical Institute was established to serve students within commuting distance of the campus. Thus, CVTI has no dormitory or housing facilities. Although the Institute assumes no responsibility for housing, assistance will be provided out-of-town students in locating suitable living accommodations if requested through the Student Personnel Office.

Housing costs vary from \$20 per month up, depending upon location, conditions, availability of food and related factors.

FACULTY ADVISOR. Each student enrolled at Catawba Valley Technical Institute will be assigned an advisor. The basic purpose of this program is to provide each student personal assistance in orientation and progress throughout the time enrolled.

The student's faculty advisor may be consulted regarding various problems, but should, in all cases, be consulted by the student in the following instances:

1. When planning for the forthcoming quarter's studies.
2. When changing courses within the current program.
3. When changing programs of study.
4. When preparing to enter a final quarter of studies to determine graduation eligibility.

HOURS OF CLASSES

Students may attend Catawba Valley Technical Institute on either a full-time or part-time basis. Normally full-time students attend four (4) to six (6) hours per day, Monday through Friday. Most programs of study for

full-time students begin between 8:00 a.m. and 10:00 a.m. and end between 1:00 p.m. and 4:00 p.m.

Evening students attend between one (1) and four (4) nights per week. Hours for these classes are between 6:00 p.m. and 10:00 p.m.

STUDENT CENTER

The initial phase of the facilities expansion program was completed in the spring of 1967. In this new addition is a modern, completely up-to-date Student Center.

The Center, a place to meet and eat, will be one of the focal points of social life on the campus. A snack bar, dining area, outdoor patio, and game area will help fill leisure moments and relieve study pressures.

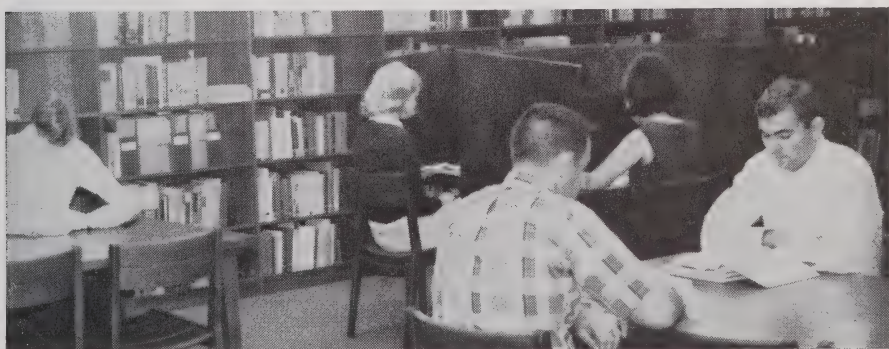
BOOKSTORE

The Institute operates a well-stocked, walk-in, self-service bookstore at which all required books, supplies, and most tools are available. In addition, other items of student interest may be purchased. While operated primarily for the students, the store is open to the general public.

Except at times of registration, the bookstore is open only during scheduled hours. All sales are on a cash basis.

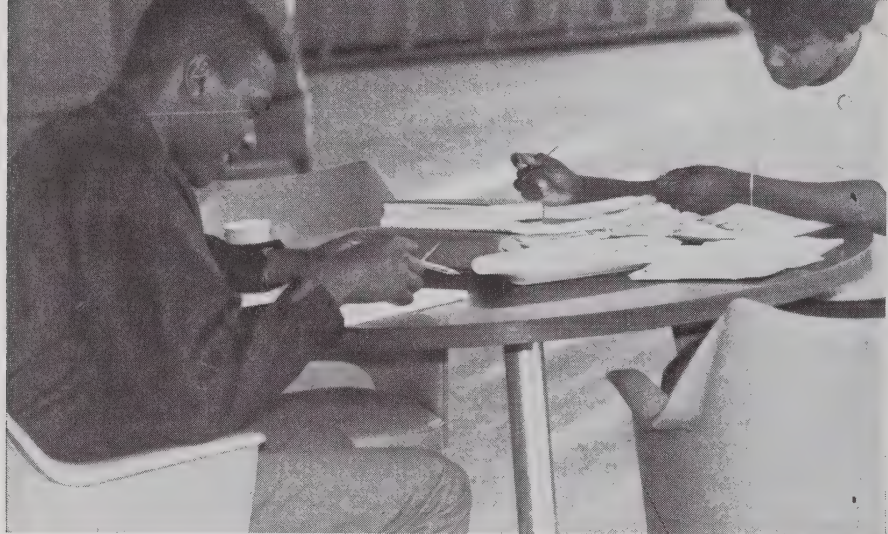
LIBRARY

Based upon book content, Catawba Valley Tech has one of the most outstanding technical libraries in North Carolina. The development of a complete Learning Resource Center meeting the demands of all levels of learning is a prime goal of the Institute. The facilities completed in the spring of 1967 provide new and considerably expanded library accommodations to house more than 14,000 volumes.



ACTIVITIES

To create an environment stimulating student interest, morale, and individual growth, CVTI supports and encourages a variety of activities supplementing the academic program.



In addition to major activities such as those listed below, additional clubs, debating teams, fall and spring dances, outings, and related activities are encouraged.

Among the social highlights of the school year are the Christmas and Spring Dances. At the latter, the annually selected beauty queen is crowned Miss CVTI.

STUDENT GOVERNMENT. Each full-time curriculum student automatically is a member of the Student Government Association. The aims of this organization are to encourage student-faculty cooperation; provide democratic action in school activities; coordinate student activities; and maintain high standards for the school by upholding high personal standards of conduct.

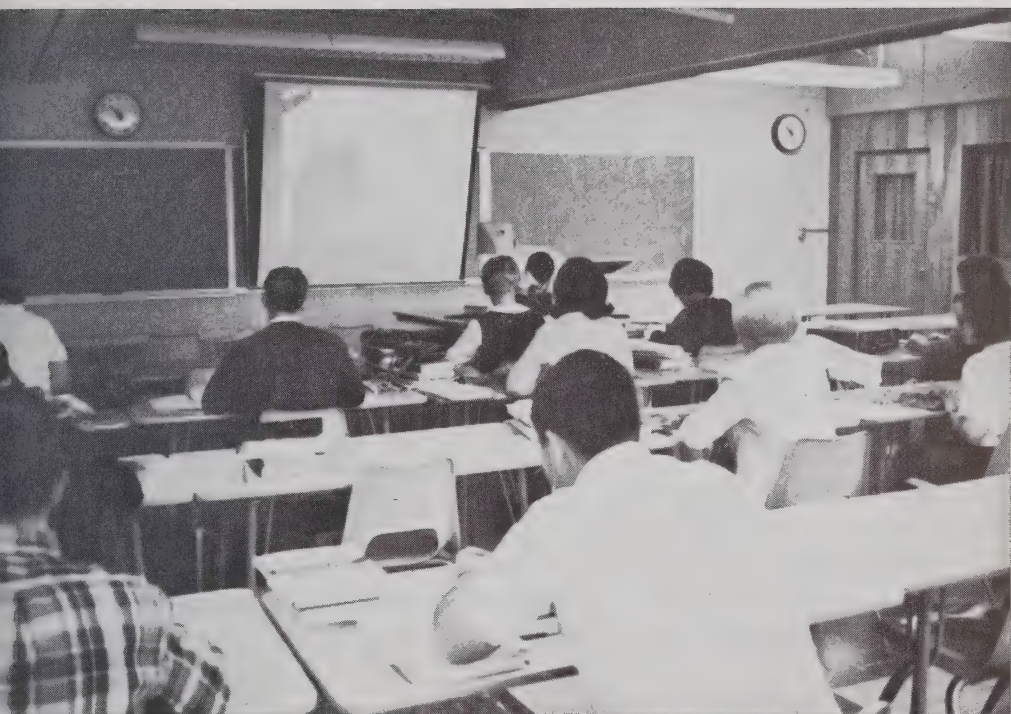
The membership of the elected body consists of fifteen representatives chosen from the student body at large.

STUDENT PUBLICATIONS. The CATVATECHI, the Catawba Tech yearbook, is a factual and photographic record of the curriculum students and their activities. Designed and prepared by the students, the CATVATECHI is published each spring. The student activity fee covers the cost of the yearbook.

The CVTI TECHNICIAN, the student newspaper publication, provides notice of significant developments and achievements related to the students and the Institute.

At present, all curriculum students are eligible for the staff of the CATVATECHI and CVTI TECHNICIAN.

CHORUS. For both male and female students with a background or interest in music, a student chorus is organized annually. In addition to special programs, performances are given at the annual graduation.



AGRI-TECH CLUB. The Agri-Tech Club, consisting of students within the Ag Business and Horticulture Departments, promotes and encourages recognition and growth of the Agri-Business and Horticultural opportunities.

ACCOUNTING CLUB. Accounting students, through this organization, further their interests at CVTI by supplementing classroom activities; by meeting with individuals employed in accounting; by acquainting employers with the CVTI accounting program and students; and by promoting friendship within the group through social activities.

ATHLETICS. Athletic activities on campus are, by State policy, restricted to intramural activities. Scheduled play and tournaments in basketball, volleyball, and softball may be available upon student interest and equipment may be made available for other activities if sufficient interest is demonstrated.

CONDUCT

Students will be expected to conduct themselves at all times as mature adults. Students who do not respect the rights and privileges and personal property of other students and who fail to demonstrate a high regard for school facilities and property will be subject to dismissal.

STUDENT TRANSPORTATION

The CVTI student body consists of commuting students. The location of the school creates numerous traffic problems and hazards. Students are,



therefore, requested to be especially alert and careful in entering and leaving school grounds. The maximum on-campus speed is 15 miles per hour.

Areas on the campus have been designated for parking. Students are required to use these areas. Under no circumstances are students to park in front of the main building or in the reserved area to the West of the main building. Cars improperly parked may be towed away at the owner's expense.

SELECTIVE SERVICE DEFERMENT

Under present Selective Service regulations, students attending school on a full-time basis are draft exempt if maintaining satisfactory grades. A student enrolled for 12 or more credit hours is considered full-time.

The Institute will assist students by notifying Selective Service Boards of enrollment and progress when requested to so do.

HONORS AND AWARDS

ACADEMIC HONORS. Each quarter, the President of Catawba Valley Technical Institute recognizes and honors each student maintaining an academic average of 93.0 or above.

FACULTY AWARDS. The faculty of CVTI annually selects the outstanding male and female student who has contributed most to the Institute. An engraved plaque is awarded to each at graduation.

VALEDICTORIAN AWARDS. Also recognized by the faculty at graduation are the students maintaining the highest academic average in the Diploma and Associate Degree programs respectively.

COMMENCEMENT MARSHALS. From rising second-year students commencement marshals are selected on the basis of scholastic averages. The individual having the highest academic average after completing one year of studies will be designated chief marshal.

ACADEMIC STANDARDS

DEGREES, DIPLOMAS, AND CERTIFICATES

Catawba Valley Technical Institute awards the ASSOCIATE DEGREE in APPLIED SCIENCE (A.A. Sc.) upon completion of a two-year program of study in the agricultural, business, or engineering divisions.

Upon completion of a one-year vocational program of study, CVTI grants a DIPLOMA in the major area of training.

CERTIFICATES are awarded for completing non-credit short courses and special programs.

ADULT HIGH SCHOOL DIPLOMAS are awarded by the cooperating Board of Education to students satisfactorily completing the Adult High School Program.

REGISTRATION

Students enrolling in credit courses are expected to register for course work on the day(s) specified for each quarter. Registration at other than the specified day and time subjects the student to a \$5.00 late registration fee.

No registrations are permitted in credit classes after the date listed in the school calendar.

Changes in schedules must be approved by the student's faculty advisor and arranged through the Student Personnel Office.

Registration for non-credit classes is usually held at the first class meeting for the course.

COURSE LOAD

Students enrolled for 12 or more quarter hours of credit applicable to their major will be considered full-time students. Students desiring to carry more than 21 credit hours must obtain permission from the Student Personnel Office.

ATTENDANCE

All students are expected to be present and regular in attendance for all scheduled classes and school functions. Absences will be considered justified and excusable only in cases of emergencies, serious illness, or death in the immediate family.

Any work missed because of excused absences must be made up. Unexcused absences will result in a "0" for the work missed.

Three or more unexcused absences, whether consecutive or cumulative during any given quarter, may be justification for dismissal.

ADVANCED PLACEMENT

The Institute offers a program of advanced placement and/or standing.



Any student may petition for such privileges through the Student Personnel office or the student's advisor.

The Committee for Advanced Placement will determine the credit to be allowed if any. Such allowances will be based upon the results of oral, written, and/or manipulative tests.

GRADUATION REQUIREMENTS

GENERAL. Although CVTI provides counseling and advisement services, the student will be held responsible for fulfilling all requirements for the degree or diploma which he expects to receive. It is also the student's responsibility to officially apply to the Student Personnel Office for his degree or diploma at the beginning of the last quarter the student is enrolled. The \$10.00 graduation fee must accompany the application.

Every candidate for an Associate Degree in Applied Science or a diploma must satisfy all of the requirements for the specific program from which he is graduating. Minimum credit hours and the required courses for each program have been established. These are listed under **PROGRAMS OF STUDY** beginning on page 23.

To be eligible for graduation, the applicant must also fulfill all financial obligations to the Institute.

Candidates for graduation are required to participate in graduation exercises to receive the degree or diploma. Exceptions to this requirement may be made if justifiable reasons are presented in writing to the Student Personnel Office.



RESIDENCE. Students graduating from Catawba Valley Technical Institute must complete a minimum of one-half the required quarter hours at CVTI. The final fifteen credit hours of studies prior to graduation must be completed at the Institute unless special permission is obtained through the Student Personnel Services Department.

GRADING SYSTEM

Grades will be issued at the end of each quarter. For unmarried students under 21 years of age, grades will be mailed to their parents. Grades for all others will be mailed to the student.

At the request of the student, grades will be provided employers or others providing financial aid.

The following numerical system will be used for all credit courses:

93-100	Excellent
86-92	Above Average
78-85	Average
70-77	Passing
Below 70	Failure
WP	Withdrawal Passing
WF	Withdrawal Failing
INC	Incomplete
AUD	Auditor (no credit)

In non-credit courses, an "S" will indicate satisfactory progress, while a "U" will designate progress in an unsatisfactory manner.

INCOMPLETES. An Incomplete (INC) may be given only under extenuating circumstances as determined by the instructor. Such a grade must be removed by the end of the following quarter. If not removed within this time, the incomplete becomes a failure. Two or more incompletes in a quarter will ordinarily result in a reduced load the following quarter. Students with three or more incompletes may register for the following quarter by special permission only.

FAILURES. A failing grade cannot be removed from a student's record. When and if the course is repeated, the second grade is recorded as the final grade for the course. Both grades will be used, however, in determining class rank or average.

TRANSCRIPTS

Transcripts are sent only upon the request of the student. No transcript of a student's record will be furnished for any student or alumnus whose financial obligations to the Institute have not been satisfied.

There will be no charge for the first transcript. A one dollar (\$1.00) fee must accompany each additional request. Allow at least one week processing and mailing time for transcript requests.

WITHDRAWALS

Students desiring to withdraw from the Institute or from a specific course must officially withdraw through the Student Personnel Office.

Students failing to officially withdraw waive all re-entry privileges for one year and all grades for the quarter will be shown as failing.

A student who officially withdraws before the end of the seventh week of the quarter in which the course is normally completed will receive a grade of WP or WF depending upon whether the work is passing or failing at the time of withdrawal.

Students cannot officially withdraw from a course after the seventh week, except in emergency situations.

ACADEMIC PROBATION

Regularly enrolled students are placed on ACADEMIC PROBATION for one quarter when their quarterly grade average falls below 72 or when they pass less than sixty (60) per cent of the credit hours attempted in the quarter.

A student who fails to maintain satisfactory academic progress two successive quarters may be asked to enroll in additional preparatory courses of study or to transfer to another program within the Institute in which success appears more likely.

The Student Personnel Services Department will offer full services to assist the student in overcoming academic difficulties or in selecting an alternate program of study.



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GENERAL INTRODUCTION

The following pages list alphabetically within five divisions the curriculum programs or majors to be offered by Catawba Valley Technical Institute during the 1970-71 school year. Programs other than those shown are planned and may be added during the biennium. The Institute reserves the right to add, delete, or change programs and courses as may be required.

The five major divisions offering credit courses within the Institute are: Agricultural, Business, Engineering, Furniture Production, and Vocational. An introduction to each program within these divisions as well as a list of subjects required for graduation in each curriculum is provided.

A description of each credit subject offered by CVTI is also included in this catalog. All course descriptions are listed under the department teaching the subject. The three-letter prefix in the course number indicates the department. Within each department courses are given in numerical sequence. In general, freshman subjects are indicated by a three-letter prefix and numbers between 100 and 200. Sophomore courses have the letter prefixes and are numbered between 200 and 300.

Course descriptions for the subjects required in the Agricultural, Business, Engineering, Furniture Production, and Vocational programs begin on page 76.

The contact hours shown in this bulletin are minimal. It is a policy of the Institute to permit students to enroll in additional subjects and laboratory work beyond those shown in the catalog in order to broaden their training.

When in any quarter the total weekly contact hours listed are fewer than twenty-five in a technical curriculum and fewer than thirty in a vocational curriculum, a student may enroll on request and with the approval of the Institute for additional instructional hours. Hours may be added to total twenty-five contact hours per week in technical programs or thirty hours per week in a vocational curriculum.

AGRICULTURE TECHNOLOGY DIVISION

ASSOCIATE DEGREES OF APPLIED SCIENCE

IN

AGRICULTURAL BUSINESS

ORNAMENTAL HORTICULTURE

AGRICULTURAL BUSINESS TECHNOLOGY

Rapid technological changes in farming and related agricultural businesses have given rise to the need for more technically trained people. A variety of agricultural businesses and industries employ persons to assist in marketing, processing, and distributing farm products and providing services to the farmer. Many responsible positions in agricultural businesses and industries require technical training not available in high schools or in four-year colleges.

As agricultural business and industry firms expand in size and number, they are experiencing rapid changes in the technologies of production, sales, and management in an increasingly competitive environment. It is anticipated that these changes in agriculture and the general economic environment will occur at an even faster rate in the next several years. Future employees of such firms must be prepared to understand these changes and adapt themselves accordingly.

The Agricultural Business Curriculum is designed to help students acquire knowledge, understandings, and abilities in the broad field of agricultural business, including agricultural production. It combines knowledge of agriculture with business training and successful completion of the program should enable the graduate to assume the responsibilities found in the many and varied opportunities in an Agri-Business firm.

Upon graduation, an individual should qualify for various jobs in agricultural business and industry: for example, salesman or store manager in farm supply stores; agricultural field serviceman; salesman, demonstrator or plant manager of feed and food companies; farm products inspector; and salesman or office managers of farm products marketing firms.



The trend toward larger farming operations with increased non-farm control of production means there will be greater employment opportunities for well-trained individuals who can efficiently and profitably supervise the production and marketing of agricultural products.

AGRICULTURAL BUSINESS CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
CHM	101	Chemistry	4	2	5
MAT	110	Business Mathematics	5	0	5
AGR	125	Animal Science	5	2	6
			17	4	19
SECOND QUARTER					
ENG	102	Composition	3	0	3
AGR	185	Soil Science and Fertilizers	5	2	6
BUS	120	Accounting	5	2	6
		Elective*	5	0	5
			18	4	20
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
BUS	110	Office Machines	2	2	3
BUS	121	Accounting	5	2	6
AGR	104	Introduction to Agricultural Economics	3	2	4
		Elective*	5	0	5
			18	6	21
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
BUS	123	Business Finance	3	0	3
BUS	232	Sales Development	3	0	3
AGR	204	Farm Business Management	5	2	6
AGR	170	Plant Science	5	2	6
			19	4	21
FIFTH QUARTER					
AGR	205	Agricultural Marketing	5	2	6
AGR	218	Agricultural Mechanization	3	2	4
		Electives	6	0	6
			14	4	16
SIXTH QUARTER					
AGR	228	Livestock Diseases and Parasites	3	2	4
AGR	201	Agriculture Chemicals	5	2	6
BUS	102	Typewriting (or elective)	2	3	3
		Elective	3	0	3
			13	7	16
Total Hours in Required Courses					100
Minimum Hours in Electives					13
Total Hours Required					113

* At least six hours of electives should be in social science.

ORNAMENTAL HORTICULTURE TECHNOLOGY

Current demand for trained technicians in the field of Ornamental Horticulture has created an urgent need for specialized training in the Horticultural skills.

Graduates in the creative and interesting field of Landscape Design are assured of immediate and rewarding employment. Industries and Institutions are looking for trained workers to supervise the maintenance of extensive landscape plantings. Nurseries and Garden Centers need managers, foremen, salesmen, and supervisors. Dynamic growth in outdoor recreation has brought about an unprecedented demand for parks and golf course superintendents, technicians, horticulturists, and agronomists. Only those workers who have the training and interest can qualify for the greater responsibility and earn the better pay.

Work experience programs, both on and off the campus, will enable the student to develop the skills and knowledge necessary for the many challenges and rewards employment opportunities in this field provide.



ORNAMENTAL HORTICULTURE CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
AGR	170	Plant Science	5	2	6
CHM	101	Chemistry	4	2	5
MAT	110	Business Mathematics	5	0	5
			<hr/> 17	<hr/> 4	<hr/> 19
SECOND QUARTER					
ENG	102	Composition	3	0	3
AGR	185	Soil Science and Fertilizers	5	2	6
AGR	151	Plant Materials, Identification and Use I	2	4	4
BUS	101	Introduction to Business	5	0	5
			<hr/> 15	<hr/> 6	<hr/> 18
THIRD QUARTER					
BUS	102	Typewriting (or elective)	2	3	3
ENG	103	Report Writing	3	0	3
AGR	153	Plant Materials, Identification and Use II	2	2	3
AGR	154	Ornamental Plant Protection	3	4	5
AGR	152	Plant Propagation	2	3	3
AGR	104	Introduction to Agricultural Economics	3	2	4
			<hr/> 15	<hr/> 14	<hr/> 21
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
BUS	232	Sales Development	3	0	3
AGR	150	General Horticulture	3	2	4
AGR	251	Landscape Design	2	4	4
AGR	254	Greenhouse Management	3	2	4
			<hr/> 14	<hr/> 8	<hr/> 18
FIFTH QUARTER					
AGR	252	Landscape Gardening	3	2	4
AGR	255	Arboriculture	3	2	4
BUS	235	Business Management	3	0	3
BUS	120	Accounting	5	2	6
		Elective*	3	0	3
			<hr/> 17	<hr/> 6	<hr/> 20
SIXTH QUARTER					
AGR	257	Nursery Management	3	2	4
AGR	201	Agriculture Chemicals	5	2	6
AGR	258	Turf Management	2	2	3
		Electives	7	0	7
			<hr/> 17	<hr/> 6	<hr/> 20
Total Hours in Required Courses					109
Minimum Hours in Electives					4
Total Hours Required					113

* At least six hours of electives should be in social science.

BUSINESS TECHNOLOGY DIVISION

ASSOCIATE DEGREES OF APPLIED SCIENCE

IN

ACCOUNTING
BUSINESS ADMINISTRATION
DATA PROCESSING
EXECUTIVE SECRETARIAL

GENERAL OFFICE
LEGAL SECRETARIAL
MEDICAL SECRETARIAL
TRAFFIC & TRANSPORTATION

ACCOUNTING TECHNOLOGY

Accounting is one of the fastest growing employment fields in America today, and the job outlook for good accountants seems bright for many years to come. These opportunities result from the tremendous business and industrial expansion in all parts of the country. Because of this emphasis, there is a growing need for trained people in the area of accounting to help managers keep track of a firm's financial operation. The Accounting Curriculum is designed to fill this need by offering students the necessary accounting theories and skills for entry into the accounting profession.

The specific objectives of the Accounting Curriculum are to develop: (1) Understanding of the principles of organization and management in business operations; (2) Understanding the fundamentals of accounting and analysis of financial statements; and (3) Understanding and skill in effective communications for business.

The duties and responsibilities of an accountant vary somewhat in different firms. Some of the duties an accountant might assume are to: record transactions, render periodic reports, maintain cost records, make special reports, complete tax returns, audit books, and advise management in areas of financial affairs.

The graduate of the Accounting Curriculum may qualify for various jobs in business and industry leading to any of the following accounting positions: accounting clerk, payroll clerk, accounting machine operator, auditor, and cost accountant. This training plus further experience should prepare graduates to become office managers, accounting supervisors, and to fill other responsible positions in a business firm.

ACCOUNTING CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
MAT	110	Business Mathematics	5	0	5
BUS	101	Introduction to Business	5	0	5
BUS	120	Accounting	5	2	6
ECO	102	Economics	3	0	3
			18	2	19
SECOND QUARTER					
ENG	101	Grammar	3	0	3
BUS	121	Accounting	5	2	6
BUS	115	Business Law	3	0	3
ECO	104	Economics	3	0	3
		Elective*	3	0	3
			17	2	18
THIRD QUARTER					
ENG	102	Composition	3	0	3
BUS	222	Accounting	5	2	6
BUS	110	Office Machines	2	2	3
		Elective	3	0	3
BUS	116	Business Law	3	0	3
			16	4	18
FOURTH QUARTER					
ENG	103	Report Writing	3	0	3
EDP	104	Introduction to Data Processing Systems	3	2	4
BUS	223	Accounting	5	2	6
BUS	123	Business Finance	3	0	3
BUS	102	Typewriting (or elective)	2	3	3
			16	7	19
FIFTH QUARTER					
ENG	204	Oral Communication	3	0	3
BUS	225	Cost Accounting	3	2	4
BUS	235	Business Management	3	0	3
BUS	124	Business Finance	3	0	3
		Elective	4	0	4
			16	2	17
SIXTH QUARTER					
BUS	229	Taxes	3	2	4
BUS	269	Auditing	3	2	4
ENG	206	Business Communications	3	0	3
		Electives	6	0	6
			15	4	17
Total Hours in Required Courses					98
Minimum Hours in Electives					10
Total Hours Required					108

* At least six hours of electives should be in social science.

BUSINESS ADMINISTRATION TECHNOLOGY

In North Carolina the opportunities in business are increasing. With the increasing population and industrial development in this State, business has become more competitive and automated. Better opportunities in business will be filled by students with specialized education beyond the high school level. The Business Administration Curriculum is designed to prepare the student for employment in one of many occupations common to business. Training is aimed at preparing the student in many phases of administrative work that might be encountered in the average business.

The specific objectives of the Business Administration Curriculum are to develop: (1) Understanding of the principles of organization and management in business operations; (2) Understanding our economy through study and analysis of the role of production and marketing; (3) Knowledge in specific elements of accounting, finance, and business law; (4) Understanding and skill in effective communication for business; (5) Knowledge of human relations as they apply to successful business operations in a rapidly expanding economy.

The graduate of the Business Administration Curriculum may enter a variety of career opportunities from beginning sales person or office clerk to manager trainee. The duties and responsibilities of this graduate vary in different firms. These duties might include: making up and filing reports, tabulating and posting data in various books, sending out bills, checking calculations, adjusting complaints, operating various office machines, and assisting managers in supervising. Positions are available in businesses such as advertising; banking; credit, finance, retailing; wholesaling; hotel, tourist, and travel industry; insurance; transportation; and communications.

BUSINESS ADMINISTRATION TECHNOLOGY

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
MAT	110	Business Mathematics	5	0	5
BUS	101	Introduction to Business	5	0	5
ECO	102	Economics	3	0	3
BUS	120	Accounting	5	2	6
			18	2	19
SECOND QUARTER					
ENG	101	Grammar	3	0	3
BUS	121	Accounting	5	2	6
BUS	115	Business Law	3	0	3
ECO	194	Economics	3	0	3
		Elective*	3	0	3
			17	2	18
THIRD QUARTER					
ENG	102	Composition	3	0	3
BUS	116	Business Law	3	0	3
BUS	110	Office Machines	2	2	3
BUS	222	Accounting	5	2	6
		Elective	3	0	3
			16	4	18
FOURTH QUARTER					
ENG	103	Report Writing	3	0	3
BUS	232	Sales Development	3	0	3
EDP	104	Introduction to Data Processing Systems	3	2	4
BUS	239	Marketing	5	0	5
BUS	123	Business Finance	3	0	3
BUS	102	Typewriting (or elective)	2	3	3
			19	5	21
FIFTH QUARTER					
ENG	204	Oral Communications	3	0	3
BUS	243	Advertising	3	2	4
BUS	235	Business Management	3	0	3
BUS	124	Business Finance	3	0	3
		Elective	3	0	3
			15	2	16
SIXTH QUARTER					
BUS	229	Taxes	3	2	4
BUS	271	Office Management	3	0	3
BUS	272	Principles of Supervision	3	0	3
ENG	206	Business Communications	3	0	3
		Elective	3	0	3
			15	2	16
Total Hours in Required Courses					102
Minimum Hours in Electives					6
Total Hours Required					108

* At least six hours of electives should be in social science.

DATA PROCESSING TECHNOLOGY

The data processing field is one of the most rapidly expanding areas today. One who chooses data processing as a career can expect an exciting and challenging future with many advancement opportunities. The data processing curriculum is designed to familiarize the student with data processing theory and equipment and to broaden the student's business knowledge.



The specific objectives of the data processing curriculum are to develop: (1) general knowledge of the basic types and uses of data processing equipment; (2) knowledge of various programming procedures and programming languages; (3) technical understanding of the over-all concept of data processing for employment leading to a position as a systems analyst.

The data processing technology graduate will fulfill the requirements for numerous positions. Some are key punch operators, tab machines operators, and computer programmers. Immediate employment is available for the graduates in the data processing curriculum.

DATA PROCESSING CURRICULUM

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
BUS	120	Accounting	5	2	6
EDP	104	Introduction to Data Processing Systems	3	2	4
MAT	110	Business Mathematics	5	0	5
		Elective	3	0	3
			16	4	18
SECOND QUARTER					
BUS	115	Business Law	3	0	3
BUS	121	Accounting	5	2	6
BUS	123	Business Finance	3	0	3
BUS	232	Sales Development	3	0	3
EDP	102	Functional Wiring Principles	2	4	4
			16	6	19
THIRD QUARTER					
BUS	110	Office Machines	2	2	3
BUS	116	Business Law	3	0	3
EDP	105	Procedure Writing, Flow Charting and Block Diagraming	3	2	4
ENG	101	Grammar	3	0	3
BUS	264	Business Statistics	5	0	5
			16	4	18
FOURTH QUARTER					
ECO	102	Economics	3	0	3
BUS	239	Marketing	5	0	5
EDP	201	Introduction to Computers	3	2	4
ENG	102	Composition	3	0	3
ENG	204	Oral Communications	3	0	3
			17	2	18
FIFTH QUARTER					
BUS	235	Business Management	3	0	3
BUS	243	Advertising	3	2	4
ECO	104	Economics	3	0	3
EDP	210	Report Program Generator (RPG) Programming	3	2	4
		Elective*	3	0	3
			15	4	17
SIXTH QUARTER					
BUS	229	Taxes	3	2	4
BUS	271	Office Management	3	0	3
BUS	272	Principles of Supervision	3	0	3
EDP	211	Report Program Generator (RPG) Programming	3	2	4
ENG	206	Business Communications	3	0	3
			15	4	17
SEVENTH QUARTER					
EDP	220	Systems Analyst Project	1	4	3
EDP	215	PL/1 (Elective)	2	4	4
ENG	103	Report Writing	3	0	3
PSY	210	Industrial Psychology	3	0	3
			9	8	13

Total Hours in Required Courses 110

Minimum Hours in Electives 10

Total Hours Required 120

* At least six hours of electives should be in social science.

EXECUTIVE SECRETARIAL TECHNOLOGY

Almost 11 million people were employed in clerical or some closely related type of work in 1965. More than 2 million of these were employed in occupations requiring stenographic skills. In fact, more individuals are employed in the clerical fields than in any other single category.

A very rapid increase in employment in the late 1960's and early 1970's is anticipated. Openings may total more than 200,000 annually. Local employment opportunities parallel national trends.

The executive secretarial curriculum is designed to develop the necessary secretarial skills in typing, dictation, transcription, operation of office machines, and terminology for employment in the business world. The special training in secretarial subjects is supplemented by related courses in mathematics, accounting, business law, and personality development.

The graduate of the Executive Secretarial curriculum may be employed as a stenographer or a secretary as well as in a variety of other clerical occupations. Stenographers are primarily responsible for taking dictation and transcribing letters, memoranda, or reports. The secretary, in addition to taking



dictation and transcribing, is given more responsibility in connection with meeting office callers, screening telephone calls, handling numerous routine duties, private and confidential records, and a variety of business details on her own initiative. Positions are available in a variety of businesses such as insurance companies, banks, marketing institutions, financial firms, as well as all types of manufacturing firms.

EXECUTIVE SECRETARIAL CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
BUS	102	Typewriting (or Elective)	2	3	3
MAT	110	Business Mathematics	5	0	5
BUS	101	Introduction to Business	5	0	5
BUS	106	Shorthand (or Elective)	2	3	3
			17	6	19
SECOND QUARTER					
ENG	102	Composition	3	0	3
BUS	103	Typewriting	2	3	3
BUS	107	Shorthand	3	2	4
BUS	110	Office Machines	2	2	3
BUS	112	Filing	3	0	3
			13	7	16
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
BUS	104	Typewriting	2	3	3
BUS	108	Shorthand	3	2	4
BUS	115	Business Law	3	0	3
BUS	120	Accounting	5	2	6
			16	7	19
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
BUS	206	Dictation and Transcription	3	2	4
BUS	205	Advanced Typewriting	2	3	3
BUS	211	Office Machines	2	2	3
		Electives*	6	0	6
			16	7	19
FIFTH QUARTER					
ENG	206	Business Communication	3	0	3
BUS	207	Dictation and Transcription	3	2	4
BUS	214	Secretarial Procedures	3	2	4
EDP	104	Introduction to Data Processing Systems	3	2	4
		Elective	3	0	3
			15	6	18
SIXTH QUARTER					
BUS	208	Dictation and Transcription	3	2	4
BUS	271	Office Management	3	0	3
BUS	210	Typing Office Practice	3	2	4
		Electives	6	0	6
			15	4	17
Total Hours in Required Courses					99
Minimum Hours in Electives					9
Total Hours Required					108

*At least six hours of electives should be in social science.

GENERAL OFFICE TECHNOLOGY

More people are now employed in clerical occupations than in any other single job category. Automation and increased production will mean that these people will need more technical skills and a greater adaptability for diversified types of jobs.

The Clerical Occupations curriculum is designed to develop the necessary variety of skills for employment in the business world. Specialized training in skill areas is supplemented by related courses in mathematics, accounting, business law, and applied psychology.

The graduate of the Clerical Occupations curriculum may be employed as an administrative assistant, accounting clerk, assistant office manager, bookkeeper, file clerk, machine transcriptionist, or a variety of other clerical-related jobs. Positions are available in almost every type of business, large or small.



GENERAL OFFICE TECHNOLOGY CURRICULUM

COURSE TITLE			Hours		Quarter Hours Credit
			Per Week Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
BUS	102	Typewriting (or Elective)	2	3	3
MAT	110	Business Mathematics	5	0	5
BUS	101	Introduction to Business	5	0	5
ECO	102	Economics	3	0	3
			18	3	19
SECOND QUARTER					
ENG	102	Composition	3	0	3
BUS	103	Typewriting	2	3	3
BUS	110	Office Machines	2	2	3
BUS	115	Business Law	3	0	3
BUS	120	Accounting	5	2	6
			15	7	18
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
BUS	104	Typewriting	2	3	3
BUS	112	Filing	3	0	3
BUS	116	Business Law	3	0	3
BUS	121	Accounting	5	2	6
			16	5	18
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
BUS	205	Advanced Typewriting	2	3	3
BUS	211	Office Machines	2	2	3
BUS	232	Sales Development	3	0	3
BUS	212	Machine Transcription—Business	1	2	2
		Elective*	3	0	3
			14	7	17
FIFTH QUARTER					
ENG	206	Business Communication	3	0	3
BUS	214	Secretarial Procedures	3	2	4
EDP	104	Introduction to Data Processing Systems	3	2	4
		Electives	9	0	9
			18	4	20
SIXTH QUARTER					
BUS	271	Office Management	3	0	3
BUS	229	Taxes	3	2	4
BUS	210	Typing Office Practice	3	2	4
		Electives	6	0	6
			15	4	17
Total Hours in Required Courses					97
Minimum Hours in Electives					12
Total Hours Required					109

* At least six hours of electives should be in social science.

LEGAL SECRETARIAL TECHNOLOGY

The demand for better qualified legal secretaries in our ever-expanding legal profession is becoming more and more acute. The purpose of this program is to provide specialized training in the accepted procedures required by the legal profession.

The curriculum is designed to develop the necessary secretarial skills in typing, dictation, transcription, and terminology for employment in the legal profession. The specialized legal training is supplemented by related courses in mathematics, accounting, law, and personality development.

The graduate of the Legal Secretarial program will be a specialist, having a knowledge of legal terminology, as well as skill in dictation and accurate transcription of legal records, reports, letters, and documents. The duties may consist of meeting office callers, screening telephone calls, filing, scheduling appointments, handling private or confidential records and reports, taking dictation and transcribing letters, memoranda, and reports, and/or possible supervision of others on the clerical staff.

Opportunities for employment exist in a variety of secretarial positions in the legal profession such as in law firms, lawyers' offices, courts, and state and government offices.



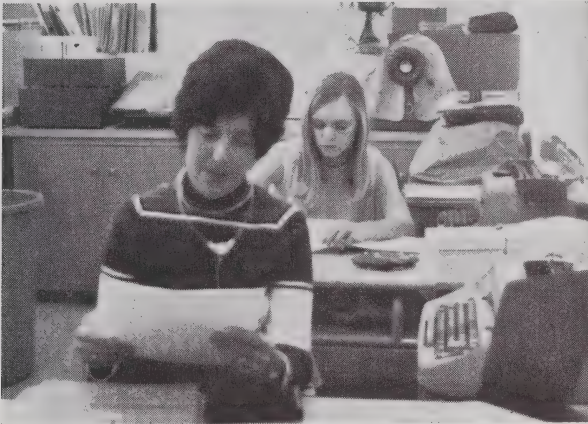
LEGAL SECRETARIAL CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
BUS	102	Typewriting (or Elective)	2	3	3
MAT	110	Business Mathematics	5	0	5
BUS	101	Introduction to Business	5	0	5
BUS	106	Shorthand (or Elective)	2	3	3
			17	6	19
SECOND QUARTER					
ENG	102	Composition	3	0	3
BUS	103	Typewriting	2	3	3
BUS	107	Shorthand	3	2	4
BUS	110	Office Machines	2	2	3
BUS	112	Filing	3	0	3
			13	7	16
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
BUS	104	Typewriting	2	3	3
BUS	108	Shorthand	3	2	4
BUS	115	Business Law	3	0	3
BUS	120	Accounting	5	2	6
			16	7	19
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
BUS	206	Dictation and Transcription	3	2	4
BUS	205	Advanced Typewriting	2	3	3
BUS	211	Office Machines	2	2	3
BUS	183	Terminology and Vocabulary	3	0	3
		Elective*	3	0	3
			16	7	19
FIFTH QUARTER					
ENG	206	Business Communication	3	0	3
BUS	207	Dictation and Transcription	3	2	4
BUS	214	Secretarial Procedures	3	2	4
EDP	104	Introduction to Data Processing Systems	3	2	4
		Elective	3	0	3
			15	6	18
SIXTH QUARTER					
BUS	208	Dictation and Transcription	3	2	4
BUS	271	Office Management	3	0	3
BUS	210	Typing Office Practice	3	2	4
		Electives	6	0	6
			15	4	17
Total Hours in Required Courses					102
Minimum Hours in Electives					6
Total Hours Required					108

* At least six hours of electives should be in social science.

MEDICAL SECRETARIAL TECHNOLOGY

The population explosion and the rapid advancements within the field of medical knowledge have created an acute need for medical personnel, including medical secretaries. The purpose of this program is to provide



specialized training in the accepted procedures required by the medical and related health professions.

The Medical Secretarial curriculum is designed to develop required skills such as typing, dictation, and transcription, as well as medical terminology and vocabulary. The special training in secretarial subjects is supplemented by needed related courses in mathematics, accounting, business law, personality development, human relations, human anatomy, and physiology.

The Medical Secretary may be employed in a variety of positions such as in physicians' offices, private and public hospitals, federal, state and local health programs, insurance offices, and pharmaceutical firms. The duties of the graduate may include taking dictation, transcribing, and typing letters, memoranda and medical reports; meeting office callers, screening telephone calls, scheduling appointments; maintaining medical records and insurance reports, as well as certain financial records.

MEDICAL SECRETARIAL TECHNOLOGY CURRICULUM

COURSE TITLE			Hours Per Week		Quarter
			Class	Lab.	Hours Credit
FIRST QUARTER					
ENG	101	Grammar	3	0	3
BUS	102	Typewriting (or Elective)	2	3	3
MAT	110	Business Mathematics	5	0	5
BUS	101	Introduction to Business	5	0	5
BUS	106	Shorthand (or Elective)	2	3	3
			17	6	19
SECOND QUARTER					
ENG	102	Composition	3	0	3
BUS	103	Typewriting	2	3	3
BUS	107	Shorthand	3	2	4
BUS	110	Office Machines	2	2	3
BUS	112	Filing	3	0	3
			13	7	16
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
BUS	104	Typewriting	2	3	3
BUS	108	Shorthand	3	2	4
BUS	115	Business Law	3	0	3
BUS	120	Accounting	5	2	6
			16	7	19
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
BUS	206	Dictation and Transcription	3	2	4
BUS	205	Advanced Typewriting	2	3	3
BUS	211	Office Machines	2	2	3
BUS	181	Human Anatomy and Physiology	3	0	3
		Elective*	3	0	3
			16	7	19
FIFTH QUARTER					
ENG	206	Business Communication	3	0	3
BUS	207	Dictation and Transcription	3	2	4
BUS	214	Secretarial Procedures	3	2	4
EDP	104	Introduction to Data Processing Systems	3	2	4
BUS	183	Terminology and Vocabulary	3	0	3
			15	6	18
SIXTH QUARTER					
BUS	208	Dictation and Transcription	3	2	4
BUS	271	Office Management	3	0	3
BUS	210	Typing Office Practice	3	2	4
BUS	284	Medical Terminology and Vocabulary	3	0	3
		Elective	3	0	3
			15	4	17

Total Hours in Required Courses 108

Minimum Hours in Electives 0

Total Hours Required 108

* At least six hours of electives should be in social science.



TRAFFIC AND TRANSPORTATION TECHNOLOGY

North Carolina, in its tremendous industrial growth, has a need for more highly trained and skilled personnel in the traffic and transportation industry. The purpose of this curriculum is to provide training in new techniques, and an understanding of the latest State and Federal regulations applicable to traffic and transportation, which should enable the student to accept employment in a higher-level job in the traffic and transportation industry.

The specific objectives of the Traffic and Transportation Curriculum are to develop: (1) understanding of the principles of organization and management in business operations and the traffic and transportation industry; (2) understanding and skill in effective communication for business; (3) understanding of the Interstate Commerce Act and related acts as they apply to traffic and transportation; and (4) understanding of the role traffic and transportation plays in the expanding business economy.

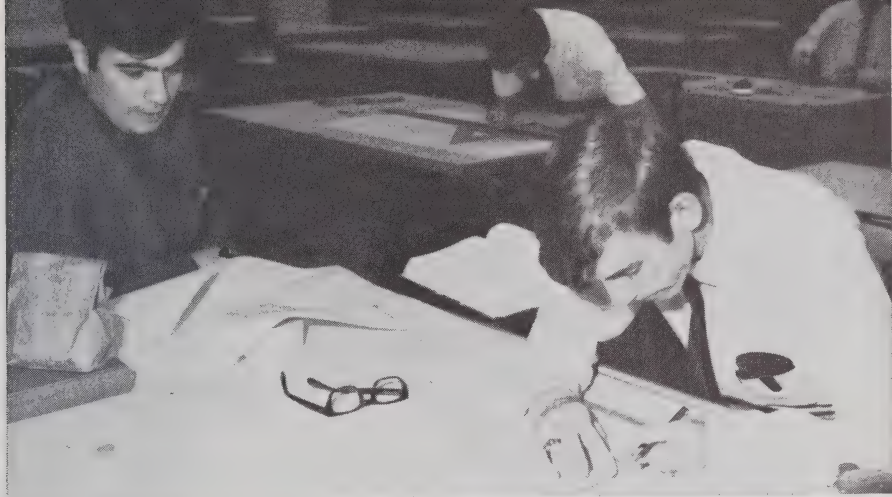
The graduate of this curriculum may seek career opportunities in the traffic and transportation industry as traffic representative, claims representative, dispatcher, rate analyst, and operational supervisor. A traffic representative is responsible for calling on the shipping public and selling the services of his respective company for their use. A claims representative renders and investigates claims for losses, shortages, damages, or overcharges on shipments of merchandise and adjusts claims. The dispatcher is responsible for dispatching men or equipment to prevent or rectify disruptions in service in all departments of a transportation system. The rate specialist determines rates, routes, and classifications applicable to merchandise or material shipped or received by common carrier. The responsibilities of the operational supervisor include the supervision of those activities that will assure the smooth and constant flow of the traffic through the terminal area.

This training, with additional experience, should qualify the student for positions as claims manager, operational manager, and manager of transportation terminals.

TRAFFIC AND TRANSPORTATION CURRICULUM

COURSE TITLE			Hours		Quarter Hours Credit
			Per Week Class	Lab.	
FIRST QUARTER					
MAT	110	Business Mathematics	5	0	5
BUS	101	Introduction to Business	5	0	5
ECO	102	Economics	3	0	3
BUS	120	Accounting	5	2	6
			18	2	19
SECOND QUARTER					
ENG	101	Grammar	3	0	3
BUS	121	Accounting	5	2	6
BUS	115	Business Law	3	0	3
ECO	104	Economics	3	0	3
BUS	178	Traffic and Transportation	3	0	3
			17	2	18
THIRD QUARTER					
ENG	102	Composition	3	0	3
BUS	116	Business Law	3	0	3
BUS	179	Traffic & Transportation	3	0	3
ECO	106	Economics of Transportation	3	0	3
		Elective*	5	0	5
			17	0	17
FOURTH QUARTER					
ENG	103	Report Writing	3	0	3
BUS	232	Sales Development	3	0	3
BUS	285	ICC Law	3	0	3
BUS	280	Traffic and Transportation	3	0	3
BUS	290	Motor Carrier	3	0	3
BUS	102	Typewriting or Elective	2	3	3
			17	3	18
FIFTH QUARTER					
ENG	204	Oral Communications	3	0	3
BUS	286	ICC Law	3	0	3
BUS	291	Motor Carrier	3	0	3
BUS	281	Traffic and Transportation	3	0	3
BUS	110	Office Machines	2	2	3
		Elective	3	0	3
			17	2	18
SIXTH QUARTER					
BUS	287	ICC Law	3	0	3
BUS	295	Traffic Claims	3	0	3
BUS	299	Traffic Management	3	0	3
ENG	206	Business Communications	3	0	3
		Electives	6	0	6
			18	0	18
Total Hours in Required Courses					97
Minimum Hours in Electives					11
Total Hours Required					108

*At least six hours of electives should be in social science.



ENGINEERING TECHNOLOGY DIVISION

ASSOCIATE DEGREES OF APPLIED SCIENCE

IN

ARCHITECTURAL DRAFTING AND DESIGN
ELECTROMECHANICAL

ELECTRONICS
MECHANICAL DRAFTING AND DESIGN

ARCHITECTURAL DRAFTING AND DESIGN TECHNOLOGY

This curriculum was designed in cooperation with the North Carolina Chapter of the American Institute of Architects. Its basic purpose is to train architectural draftsmen for the architect's office and the building industry.

Through a survey made of North Carolina AIA members, it was determined that a large number of architectural draftsmen is needed to fill existing vacancies. Projections show that this need will continue to expand at a tremendous rate.

This program provides the individual with the technical drafting skills and knowledge leading to employment and rapid advancement into related areas of work as job experience is obtained.

Architectural drafting technicians are concerned with turning the architect's design sketches into complete and accurate working plans and detail drawings for construction purposes. He may prepare floor plans, elevation drawings, construction details, mechanical equipment layouts, door, window, and room schedules, and site plans. The drafting technician will be involved in work requiring a knowledge of building codes, specifications, and contract documents.

With experience, the technician may be involved in estimating, field inspection, or in collecting site data and other information pertinent to construction.

ARCHITECTURAL DRAFTING AND DESIGN CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
MAT	101	Technical Mathematics	5	0	5
PHY	101	Physics: Work, Energy, Power	3	2	4
DFT	106	Architectural Drafting	2	6	4
CIV	105	Architectural Materials & Methods	3	3	4
			<hr/>	<hr/>	<hr/>
			16	11	20
SECOND QUARTER					
ENG	102	Composition	3	0	3
MAT	102	Technical Mathematics	5	0	5
PHY	102	Physics: Properties of Matter	3	2	4
DFT	107	Architectural Drafting	2	6	4
AHR	106	Architectural Mechanical Equipment	3	3	4
			<hr/>	<hr/>	<hr/>
			16	11	20
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
MAT	103	Technical Mathematics	5	0	5
PHY	103	Physics: Electricity	3	2	4
DFT	108	Architectural Drafting	0	9	3
CIV	114	Statics	5	0	5
			<hr/>	<hr/>	<hr/>
			16	11	20
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
CIV	216	Strength of Materials	3	2	4
DFT	220	Architectural Drafting	2	9	5
CIV	101	Surveying	2	6	4
			<hr/>	<hr/>	<hr/>
			10	17	16
FIFTH QUARTER					
DFT	221	Architectural Drafting	2	9	5
DFT	233	Office Practice Seminar	2	0	2
DFT	235	Codes, Specifications and Contract Documents	3	3	4
			Electives*	0	7
			<hr/>	<hr/>	<hr/>
			14	12	18
SIXTH QUARTER					
DFT	222	Architectural Drafting	2	9	5
DFT	236	Construction Estimating and Field Inspection	3	3	4
			Electives	0	8
			<hr/>	<hr/>	<hr/>
			13	12	17
Total Hours in Required Courses					102
Minimum Hours in Electives					9
Total Hours Required					111

* At least six hours of electives should be in social science.

ELECTROMECHANICAL TECHNOLOGY

The Electromechanical technology is among the newest fields in engineering. Industry has been hiring the electronic technician to handle various Electrical-Electronic aspects of equipment. Also required was a mechanical technician to handle the mechanical aspects of the equipment. Advances in both manufacturing and maintenance techniques have made it apparent that it would be more productive for industry to bridge the gap between the two technical specialties.

Thus, the purpose of this curriculum is to provide the individual with the required skills and knowledges through the integrated electrical-electronic and mechanical engineering specialties. Courses provided give the student a background in electricity-electronics, such as Fundamentals of Electricity and Wave Shaping and Pulse Circuits; in mechanical operations and functions, such as, Machine Processes and Mechanisms; and in Electromechanical Systems covering such devices as computers, servo-mechanisms, and numerical control systems.

The Electromechanical Technician fabricates, tests, analyzes, and adjusts precision electromechanical instruments, such as temperature probes and aerodynamic probes. He uses handtools and metal working machines such as bench lathe, milling machine, punch press and drill press to fabricate housings, jigs, and holding devices.

He may assemble wires, insulation, and electrical components, such as, resistors and capacitors, using holding fixtures, files, soldering tools, cutters, pliers, and screwdriver. Part of the job responsibilities involve testing assembled instruments for circuit continuity and operational reliability using multimeter, oscilloscope, oscillator, voltmeter, and bridge. Such a technician will record, analyze and submit written reports regarding procedures and results.

The Electromechanical Technician has excellent employment opportunities. A recent nationwide research project showed that, in industries employing both electronics and mechanical technicians, the need is for 25 per cent more Electromechanical Technicians by 1970 than for both electronics and mechanical technicians combined. Potential employment possibilities with industry, business, and government are available in maintenance, production, research, development, or sales as an engineering assistant, engineering aide, or trouble shooter.

ELECTROMECHANICAL CURRICULUM

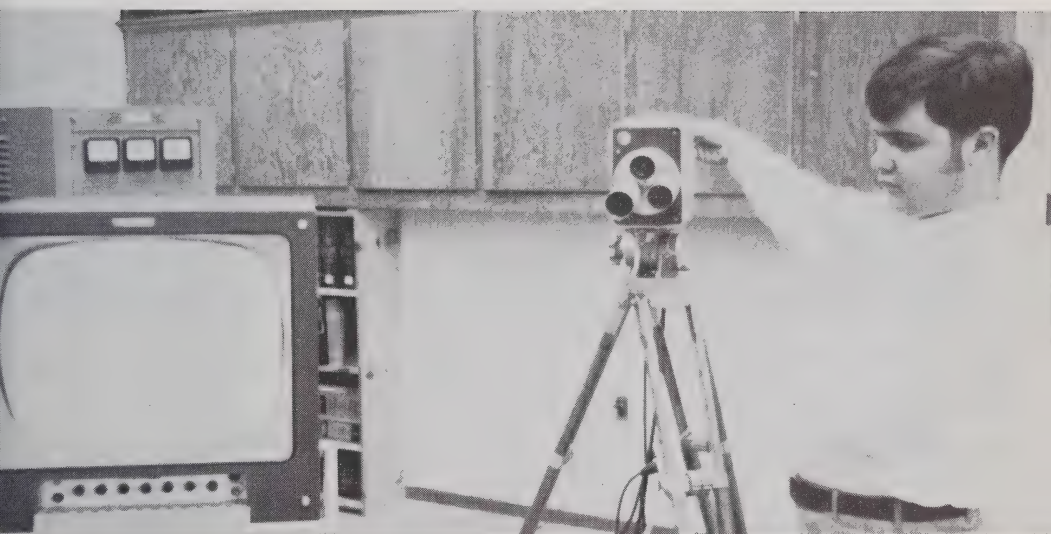
COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
MAT	101	Technical Mathematics	5	0	5
PHY	101	Physics: Work, Energy, Power	3	2	4
ELC	101	Fundamentals of Electricity	4	6	6
			15	8	18
SECOND QUARTER					
ENG	102	Composition	3	0	3
MAT	102	Technical Mathematics	5	0	5
DFT	101	Technical Drafting	2	6	4
PHY	102	Physics: Properties of Matter	3	2	4
ELC	102	Fundamentals of Electricity	4	6	6
			17	14	22
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
MAT	103	Technical Mathematics	5	0	5
ELN	105	Control Devices	5	6	7
ELN	101	Electronic Instruments and Measurements	1	6	3
			14	12	18
FOURTH QUARTER					
ENG	201	Oral Communications	3	0	3
MEC	101	Machine Processes	2	4	3
PHY	104	Physics: Light & Sound	3	2	4
MEC	110	Fundamental Mechanisms	2	4	4
CYB	201	Electromechanical Systems	3	2	4
			13	12	18
FIFTH QUARTER					
ELN	214	Wave Shaping and Pulse Circuits	2	2	3
CYB	202	Electromechanical Systems	3	6	5
MEC	235	Hydraulics & Pneumatics	3	3	4
		Electives*	7	0	7
			15	11	19
SIXTH QUARTER					
ELN	240	Digital Computers	3	0	3
CYB	203	Electromechanical Systems	3	6	6
		Electives	8	0	8
			14	6	17

Total Hours in Required Courses 103

Minimum Hours in Electives 9

Total Hours Required 112

*At least six hours of electives should be in social science.



ELECTRONICS TECHNOLOGY

The field of electronics has developed at a tremendously rapid pace, especially since 1940. For many years the major concern of electronics was in the area of communications. Developments during and following World War II have revolutionized production techniques. Completely new industries have been established to supplement the need and demand for electronics equipment. This rapid growth of the electronics industry has been accompanied by an equally phenomenal growth in the demand for qualified technicians—both men and women.

This program provides a basic background in electronics theory and practical applications for business and industry. The electronics technician may start in one or more of the following areas: research, design, development, production, maintenance, or sales. He may be an engineering assistant, a laboratory technician, supervisor, or equipment specialist.

Upon completion of this program, students will find employment opportunities in such fields as radio and television production, radar, sonar, telemetering, and other forms of communication such as telephone; industrial and medical measuring, recording, indicating, and controlling devices; navigational equipment; missile and spacecraft guidance; electronic computers; and other types of equipment using vacuum tubes, transistors, and semiconductor circuits.

ELECTRONICS CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
MAT	101	Technical Mathematics	5	0	5
PHY	101	Physics: Work, Energy, Power	3	2	4
ELC	101	Fundamentals of Electricity	4	6	6
			15	8	18
SECOND QUARTER					
ENG	102	Composition	3	0	3
MAT	102	Technical Mathematics	5	0	5
PHY	102	Physics: Properties of Matter	3	2	4
DFT	101	Technical Drafting	2	6	4
ELC	102	Fundamentals of Electricity	4	6	6
			17	14	22
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
MAT	103	Technical Mathematics	5	0	5
ELN	101	Electronic Instruments and Measurements	1	6	3
ELN	105	Control Devices	5	6	7
			14	12	18
FOURTH QUARTER					
ENG	201	Oral Communications	3	0	3
MAT	201	Technical Mathematics	5	0	5
PHY	104	Physics: Light and Sound	3	2	4
ELN	205	Application of Vacuum Tubes and Transistors	5	6	7
			16	8	19
FIFTH QUARTER					
ELN	210	Semiconductor Circuit Analysis	5	3	6
ELN	214	Wave Shaping and Pulse Circuits	2	3	3
		Electives*	9	0	9
			16	6	18
SIXTH QUARTER					
ELN	215	Wave Shaping and Pulse Circuits	2	3	3
ELN	220	Advanced Electronic Systems	5	6	7
		Electives	8	0	8
			15	9	18

Total Hours in Required Courses 102

Minimum Hours in Electives 11

Total Hours Required 113

* At least six hours of electives should be in social science.



MECHANICAL DRAFTING AND DESIGN TECHNOLOGY

In making a space capsule or an electric iron, a nuclear submarine or a television set, a bridge or a typewriter, detailed plans are needed that give the exact dimensions and specifications for the entire object and each of its parts. The men and women who draw these plans are draftsmen.

Employment of draftsmen, locally and nationally, is expected to rise rapidly as a result of the increasingly complex design problem. The number needed only to replace those who retire or die is estimated at more than 10,000 annually.

Mechanical drafting technicians translate the ideas, rough sketches, specifications and calculations of engineers and designers into working plans used in making machines and all types of mechanical equipment. In addition to the basic courses in drafting, the mechanical drafting and design technology includes engineering related subjects such as hydraulics, strength of materials, and metallurgy. The connection between theory and actual practice is emphasized in labs in which the students perform experiments on industrial equipment. A special lab is provided for this purpose and is equipped with approximately \$65,000 of the most modern metallurgical and test equipment. Draftsmen may calculate the strength, reliability, and cost of materials. In their drawings and specifications, they describe exactly what materials and processes workers are to use on a particular job.

To prepare drawings, CVTI students develop skill in using such instruments as compasses, dividers, protractors, triangles, and drafting machines. They also learn to use engineering handbooks and tables to assist in solving technical problems. Graduates may also coordinate design, production, tooling, material and planning activities. With experience they may often supervise the preparation of working drawings.

Mechanical drafting technicians are employed in many types of manufacturing, fabrication, research development and service industries. Substantial numbers are also employed in communications, transportation, public utilities, consulting engineering firms, and federal, state, and local governments.

MECHANICAL DRAFTING AND DESIGN CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
MAT	101	Technical Mathematics	5	0	5
PHY	101	Physics: Work, Energy, Power	3	2	4
DFT	101	Technical Drafting	2	6	4
MEC	101	Machine Processes	2	4	3
			<hr/>	<hr/>	<hr/>
			15	12	19
SECOND QUARTER					
ENG	102	Composition	3	0	3
MAT	102	Technical Mathematics	5	0	5
PHY	102	Physics: Properties of Matter	3	2	4
DFT	102	Technical Drafting	2	6	4
		Elective	3	0	3
			<hr/>	<hr/>	<hr/>
			16	8	19
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
MAT	103	Technical Mathematics	5	0	5
PHY	103	Physics: Electricity	3	2	4
PHY	106	Applied Mechanics	5	0	5
DFT	103	Technical Drafting	2	6	4
			<hr/>	<hr/>	<hr/>
			18	8	21
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
DFT	201	Technical Drafting	2	6	4
DFT	204	Descriptive Geometry	2	4	4
MEC	205	Strength of Materials	3	2	4
MEC	210	Physical Metallurgy	3	3	4
			<hr/>	<hr/>	<hr/>
			13	15	19
FIFTH QUARTER					
DFT	205	Design Drafting I	2	6	4
DFT	211	Mechanisms	3	2	4
MEC	211	Physical Metallurgy	3	3	4
		Electives*	6	0	6
			<hr/>	<hr/>	<hr/>
			14	11	18
SIXTH QUARTER					
MEC	102	Machine Processes	2	4	3
DFT	206	Design Drafting II	2	6	4
MES	235	Hydraulics & Pneumatics	3	3	4
		Electives	6	0	6
			<hr/>	<hr/>	<hr/>
			13	13	17

Total Hours in Required Courses 104

Minimum Hours in Electives 9

Total Hours Required 113

* At least six hours of electives should be in social science.

FURNITURE PRODUCTION TECHNOLOGY DIVISION

ASSOCIATE DEGREES OF APPLIED SCIENCE

IN

FURNITURE DRAFTING AND DESIGN

FURNITURE PRODUCTION

DIPLOMAS

IN

UPHOLSTERY

UPHOLSTERY CUTTING AND SEWING

FURNITURE DRAFTING AND DESIGN TECHNOLOGY

North Carolina, and especially the area served by CVTI, is one of the leading centers of furniture production in the world. Thus, there is a continually increasing demand for men and women qualified as furniture draftsmen.

Furniture drafting and design technicians are concerned with the preparation of drawings required for design proposals, for samples, and for actual items in production.

Furniture draftsmen perform many duties. They develop drawings for production and assembly from pictorial drawings and written or verbal specifications of the designer. Frequently, they coordinate sample production and development of finishes; investigate new materials and methods; research design problems; assist in showroom planning and set-up; and work with sales and customer services.

Technicians with experience may often be called upon to act as product development supervisors and to contribute greatly in product design.

Furniture Drafting and Design technicians are employed by all classifications of household, institutional, office, and church furniture manufacturers, design consultants, and interior designers.

FURNITURE DRAFTING AND DESIGN CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ENG	101	Grammar	3	0	3
MAT	101	Technical Mathematics	5	0	5
PHY	101	Physics: Properties of Matter	3	2	4
DFT	101	Technical Drafting	2	6	4
FUR	102	Furniture Processes	3	3	4
			16	11	20
SECOND QUARTER					
ENG	102	Composition	3	0	3
MAT	102	Technical Mathematics	5	0	5
PHY	102	Physics: Work, Energy, Power	3	2	4
DFT	102	Technical Drafting	2	6	4
FUR	103	Furniture Processes	3	3	4
			16	11	20
THIRD QUARTER					
ENG	103	Report Writing	3	0	3
ISC	216	Product Development	3	0	3
DFT	105	Furniture Drafting	2	6	4
DES	117	Visual Design I	2	6	4
DES	225	Furniture Styling	2	3	3
			12	15	17
FOURTH QUARTER					
ENG	204	Oral Communication	3	0	3
DFT	204	Descriptive Geometry	2	4	4
DFT	240	Furniture Drafting	2	6	4
DES	118	Visual Design II	3	3	4
DES	239	Rendering	2	3	3
			12	16	18
FIFTH QUARTER					
DFT	241	Furniture Design Drafting	2	6	4
DES	216	Tectonic Design	3	3	4
DES	245	Anatomical Relationships	5	0	5
		Electives*	6	0	6
			16	9	19
SIXTH QUARTER					
DFT	242	Furniture Design Drafting	2	6	4
DES	250	Interior Planning and Display	3	3	4
		Electives*	9	0	9
			14	9	17
Total Hours in Required Courses					102
Minimum Hours in Electives					9
Total Hours Required					111

* At least six hours of electives should be in social science.

FURNITURE PRODUCTION TECHNOLOGY

The furniture industry plays a major role in the economic development of North Carolina. North Carolina has experienced an 18 per cent growth during the past two years and employs more people in this industry than any other furniture producing state in the United States. The growth and development that has taken place plus the expected growth in the future indicates an ever increasing need for additional managerial, technical, skilled and semi-skilled personnel. Opportunities are virtually unlimited in this industry and many exciting careers are available on all levels for people who are properly prepared and trained to meet the industry's needs and challenges.

The furniture technology is a program designed cooperatively by industry and education. The curriculum's purpose is to provide a comprehensive understanding of the furniture industry from raw materials through the finished product. The program in its broad concept provides a foundation in both case goods and upholstery manufacturing, thus enabling the student to select a specific area to pursue upon graduation.

Program content will involve two distinct areas of study. First, the student will be exposed to manufacturing methods, techniques, and materials. Secondly, the student will pursue such courses as math, economics, supervision, human relations, technical drafting and others that will provide related competencies in the development of a furniture technician.

Students who master each phase of the furniture technology program should be well prepared to enter the furniture industry at various levels such as an assistant to supervisor, superintendent, department or division head. There are many other possibilities within the industry such as a trouble shooter, liaison between departments, shipping or transportation or expeditor. Innumerable opportunities will be available to the graduate because each company will have an individual preference as to the graduate's placement.

Having successfully completed the formal training and gained practical experience in industry, excellent advancement opportunities will prevail. The final analysis to one's success will depend on individual initiative, adaptation and application to the opportunities available.

FURNITURE PRODUCTION CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
DFT	101	Technical Drafting	2	6	4
ENG	101	Grammar	3	0	3
FUR	101	Introduction to the Furniture Industry	3	0	3
MAT	101	Technical Mathematics	5	0	5
MAT	110	Business Mathematics	5	0	5
			18	6	20
SECOND QUARTER					
DFT	102	Technical Drafting	2	6	4
ENG	102	Composition	3	0	3
FUR	105	Upholstery Processes	2	2	3
FUR	120	Lumber and its Characteristics	5	0	5
MAT	102	Technical Mathematics	5	0	5
			17	8	20
THIRD QUARTER					
BUS	272	Principles of Supervision	3	0	3
ENG	103	Report Writing	3	0	3
FUR	104	Furniture Construction	4	6	6
PHY	101	Physics: Work, Energy, & Power	3	2	4
		Elective*	3	0	3
			16	8	19
FOURTH QUARTER					
ENG	204	Oral Communications	3	0	3
FUR	201	Assembly Methods and Techniques	2	6	5
FUR	205	Machine Room Methods and Techniques	2	6	5
PHY	103	Physics: Electricity	2	3	4
			9	15	17
FIFTH QUARTER					
FUR	202	Wood and Plastics Finishing	2	8	6
ISC	211	Cost Analysis	5	0	5
MGT	201	Management Techniques	5	0	5
		Elective	3	0	3
			15	8	19
SIXTH QUARTER					
FUR	247	Research Problem	2	6	4
ISC	214	Production Scheduling	3	0	3
ISC	221	Quality Control	3	0	3
		Electives	9	0	9
			17	6	19
Total Hours in Required Courses					99
Minimum Hours in Electives					15
Total Hours Required					114

*At least six hours of electives should be in social science.



UPHOLSTERING

Upholstering is among the most skilled and among the better paying occupations in the furniture industry. This course covers various styles and types of furniture. The primary emphasis is upon actual practical experience in the construction, springing up, covering, and trimming of upholstered chairs and sofas. Emphasis throughout is placed upon quality and the development of production speed.

Full-time students may complete the upholstery course in 1½ quarters and part-time students in 3 quarters.

The student will learn and/or develop skill in the following areas:

- I. History and styling of furniture
- II. Tools and equipment
- III. Spitting tacks—hammer technique
- IV. Stapling—staple gun techniques
- V. Springing up
- VI. Arranging and securing filler and padding

- A. Sewing large stitches across surface of fabric; covering of springs and working filler under stitches to form holding base
- B. Spreading more filler over surface and placing cover filler, sewing it to bottom fabric
- C. Placing additional filler on top of cover and covering padded sections with unbleached muslin, tacking muslin to frame
- D. Arranging layer of cotton wadding over muslin cover for smoother finish

VII. Covers

VIII. Covering padded frame with upholstery fabric

- A. Selecting previously cut fabric, partially stitched, and aligning and smoothing it in place over cotton wadding
- B. Tacking cover to form in key spots to hold it temporarily
- C. Sewing sections of cover which have been left unstitched with invisible lockstitches
- D. Strengthening and tacking edges of cover tightly and evenly to frame
- E. Untacking covering in places and inserting regulator to smooth out lumpy padding, then permanently tacking
- F. Trimming covering around legs and uprights to make a neat fit

IX. Making and typing buttons

X. Tufting and buttoning

UPHOLSTERY CUTTING AND SEWING

Furniture manufacturing, one of the two largest industries in this area, affords women excellent employment opportunities, especially as upholstery cutters and sewing machine operators. Many men also find this course a valuable asset in operating their own businesses or seeking advancement to supervisory positions.

In this program, the student learns to develop patterns, cut upholstery material, as well as to adjust and operate the sewing machine to sew the material for proper fitting and matching of fabrics. Not only are fundamental sewing operations learned, but quality and production speed emphasized.

The course may be completed in one quarter on a full-time basis or two quarters part-time.

The student will learn:

- I. Basic cutting techniques
 - A. How to measure a frame
 - B. How to develop a pattern

- C. How to match and mark fabrics
- D. How to properly use tools to cut the material
- II. Basic knowledge of the sewing machine
 - A. How to thread a machine
 - B. How to and when to change stitches
 - C. How to change needles
 - D. How and when to adjust tension
- III. Understanding pieces to be sewn
 - A. Understanding cutter's marks
 - B. Where and why to sew pulls
 - C. Where and why to sew welts
 - D. How to sew welts
 - E. How to French seam (top stitch)
 - F. How to match stripes
- IV. Sewing the loose cushion
 - A. Learning the importance of exact seaming
 - B. How to apply boxing to face of cushion to sew
 - C. How to join boxing
 - D. How to match stripes on boxing and face
 - E. How to finish cushion
- V. Sewing skirts and flounces
 - A. Learning to sew box-pleat skirt
 - B. Learning to line box-pleat skirt
 - C. Learning to sew flounces



VOCATIONAL DIVISION

DIPLOMAS IN

AUTOMOTIVE MECHANICS

ELECTRICAL INSTALLATION

MACHINE SHOP

PRACTICAL NURSING

UPHOLSTERING

UPHOLSTERY CUTTING AND SEWING

AUTOMOTIVE MECHANICS

There will be many thousands of job openings for automobile mechanics during the 1965-75 decade. Deaths and retirements alone are expected to provide about 10,000 job openings each year. This need is noted locally as well as throughout the United States.

This course provides a training program for developing the basic knowledge and skills needed to inspect, diagnose, repair, or adjust automotive vehicles. Manual skills are developed in practical shop work. Thorough understanding of the operating principles involved in the modern automobile comes in class assignments, discussion, and shop practice.

CVTI automotive graduates maintain and repair mechanical, electrical, and body parts of passenger cars, trucks, and buses. They also may service tractors, marine engines, or other gasoline-powered equipment. As mechanics, they inspect and test to determine the causes of faulty operation. They repair or replace defective parts to restore the vehicle or machine to proper operating condition. They use shop manuals and other technical publications. Graduates in smaller shops usually are general mechanics qualified to perform a variety of repair jobs. A large number of automotive mechanics specialize in particular types of repair work, such as power steering and power brakes, or automatic transmissions. Usually such specialists have an all-round knowledge of automotive repair and may occasionally be called upon to do other



types of work. Some graduates may open their own shops, become service managers, sales, and/or automotive parts personnel. Thus, opportunities for advancement and above-average-salaries are open for the qualified graduate of the CVTI automotive program.

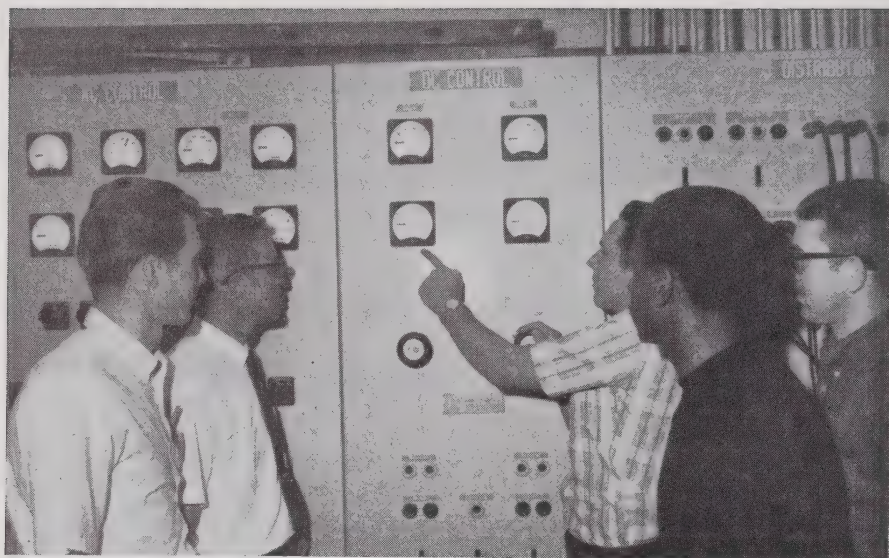
AUTOMOTIVE CURRICULUM

COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
FIRST QUARTER					
AUT	1101	Internal Combustion Engines	3	12	7
MAT	1101	Fundamentals of Mathematics	5	0	5
ENG	1101	Reading Improvement	2	0	2
PHY	1101	Applied Science	3	2	4
			13	14	18
SECOND QUARTER					
AUT	1102	Engine Electrical and Fuel Systems	5	12	9
ENG	1102	Communication Skills	3	0	3
DFT	1101	Schematics and Diagrams: Power Mechanics	0	3	1
PHY	1102	Applied Science	3	2	4
			11	17	17
THIRD QUARTER					
AUT	1123	Automotive Chassis and Suspension Systems	3	9	6
AUT	1121	Braking Systems	3	3	4
PSY	1101	Human Relations	3	0	3
AHR	1101	Automotive Air Conditioning	2	3	3
			11	15	16
FOURTH QUARTER					
AUT	1124	Automotive Power Train Systems	3	9	6
AUT	1125	Automotive Servicing	3	9	6
BUS	1103	Small Business Operations	3	0	3
			9	18	15
			Total Credit Hours Required 66		

ELECTRICAL INSTALLATION AND MAINTENANCE

The rapid expansion of the national economy and the increasing development of new electrical products is providing a growing need for qualified people to install and maintain electrical equipment. By mid-1960 more than 350,000 were employed as either construction electricians or maintenance electricians. Between 5,000 and 10,000 additional tradesmen are required each year just to replace those leaving the industry. It is expected that the total requirements for electrical tradesmen will reach 700,000 by 1970. The shortage of electricians is certainly noted in this local area also. Qualified licensed electricians are among the highest paid construction workers in the United States.

This course will provide a training program in the basic knowledge, fundamentals, and practices involved in the electrical trades. A large portion of



the program is devoted to laboratory and shop instruction which is designed to give the student practical knowledge and application experience in the fundamentals taught in class.

The graduate of the Electrical Installation and Maintenance Program will be qualified to enter the electrical trades where he will assist in the planning, lay-out, installation, check-out, and maintenance of systems in residential, commercial, or industrial plants. He will have an understanding of the fundamentals of the National Electrical Code regulations as related to wiring installations, electrical circuits, and the measurements of voltage, current, power, and power factor of single and polyphase alternating circuits. He will have a basic knowledge of motor and motor control systems; industrial electronic control systems; business procedures, organization, and practices; communicative skills; and the necessary background to be able to advance through experience and additional training. Following actual experience, the CVTI electrical installation and maintenance graduate after apprenticeship will be eligible to take the North Carolina State Electrical License examination.

ELECTRICAL CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
ELC	1112	Direct and Alternating Current	5	12	9
ENG	1101	Reading Improvement	2	0	2
MAT	1115	Electrical Mathematics I	5	0	5
PHY	1101	Applied Science	3	2	4
			15	14	20

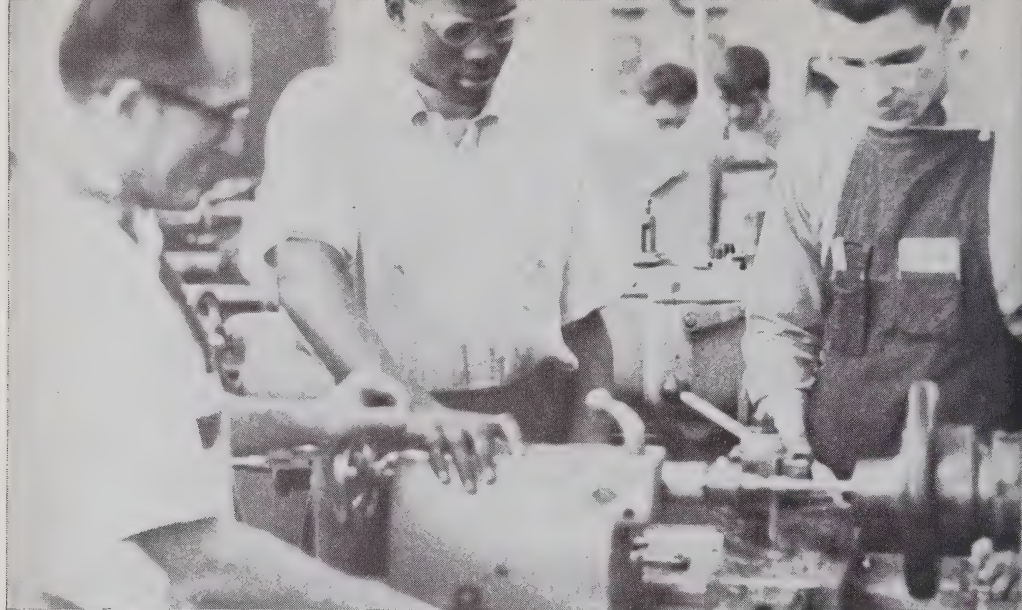
COURSE TITLE			Hours Per Week	Quarter Hours Credit	
			Class	Lab.	
SECOND QUARTER					
ELC	1113	Alternating Current and Direct Current Machines and Controls	5	12	9
ENG	1102	Communication Skills	3	0	3
PHY	1102	Applied Science	3	2	4
MAT	1116	Electrical Mathematics II	5	0	5
			16	14	21
THIRD QUARTER					
ELC	1124	Residential Wiring	5	9	8
ELN	1118	Industrial Electronics	3	6	5
PSY	1101	Human Relations	3	0	3
DFT	1113	Blueprint Reading: Electrical	1	3	2
			12	18	18
FOURTH QUARTER					
ELC	1125	Commercial and Industrial Wiring	5	12	9
ELN	1119	Industrial Electronics	3	6	5
BUS	1103	Small Business Operations	3	0	3
			11	18	17
Total Credit Hours Required			76		

MACHINE SHOP

Surveys recently completed in North Carolina and locally show that many of the existing industries lack the time and facilities for training enough machinists to meet present and planned needs. Expanding industries already located in our State and new industries under development invariably express the need for skilled machinists who have the background, knowledge, and potential to advance.

This course is designed to give students the opportunity to acquire basic knowledge, skills, and related technical information necessary to gain employment in the machine shop industry. Students will develop skill in bench work, layout, drilling, lathe work, milling, shaping, planing, broaching, and grinding. Operating principles of machine tools, use of measuring and testing instruments, math and blueprint reading are also covered. Through actual shop experience, class assignments, discussion, demonstrations, and experiments, the students become industrially qualified.

The qualified graduate is a skilled metal worker who shapes metal parts by using machine tools and hand tools. His training and experience enable him to plan and carry through all the operations needed in turning out a machined product and to switch readily from one kind of product to another. He will be able to select the proper tools and material required for each job and to plan the cutting and finishing operations in their proper order so that he can complete the finished work according to blueprint or written specifications. He makes standard shop computations relating to dimensions



of work, tooling, feeds, and speeds of machining. Through the use of instruments such as micrometers and gages, he works to thousands of an inch.

CVTI graduates can not only expect above-average-wages, but also advancement opportunities to positions such as set up men, foremen, and tool and die makers.

MACHINE SHOP CURRICULUM

COURSE TITLE			Hours Per Week		Quarter Hours Credit
			Class	Lab.	
FIRST QUARTER					
MEC	1101	Machine Shop Theory & Practice	3	12	7
MAT	1101	Fundamentals of Mathematics	5	0	5
DFT	1104	Blueprint Reading: Mechanical	0	3	1
ENG	1101	Reading Improvement	2	0	2
PHY	1101	Applied Science	3	2	4
			13	17	19
SECOND QUARTER					
MEC	1102	Machine Shop Theory & Practice	3	12	7
MAT	1103	Geometry	3	0	3
DFT	1105	Blueprint Reading: Mechanical	0	3	1
PHY	1102	Applied Science	3	2	4
ENG	1102	Communication Skills	3	0	3
			12	17	18
THIRD QUARTER					
MEC	1103	Machine Shop Theory & Practice	3	12	7
MEC	1115	Treatment of Ferrous Metals	2	3	3
DFT	1106	Blueprint Reading: Mechanical	0	3	1
MAT	1104	Trigonometry	3	0	3
PSY	1101	Human Relations	3	0	3
			11	18	17

COURSE TITLE				Hours Per Week		Quarter Hours Credit
				Class	Lab.	
FOURTH QUARTER						
MEC	1104	Machine Shop Theory & Practice		3	12	7
MEC	1116	Treatment of Non-Ferrous Metals		2	3	3
MAT	1123	Machinist Mathematics		3	0	3
BUS	1105	Industrial Organizations		3	0	3
				11	15	16
Total Credit Hours Required				70		

PRACTICAL NURSING

The accelerated growth of population in North Carolina and rapid advancement in medical technology demand a tremendously increased number of well-trained, capable personnel for health service positions. CVTI, in conjunction with the new Catawba Memorial Hospital, Newton, and the Iredell Memorial Hospital, Statesville, offers the LPN program to meet local needs for such personnel. Classes will be held at the Institute while actual experience will be obtained at one of the hospitals. The graduate is eligible to take and must pass the N. C. Board of Nursing LPN examination to obtain her license.

The LPN is qualified and prepared to function in a variety of situations: hospitals of all types, nursing homes, clinics, doctors' and dentists' offices and, in some localities, public health facilities. In all situations, the LPN functions under the supervision of a registered nurse and/or licensed physician.

Job requirements for the Licensed Practical Nurse include suitable personal characteristics, ability to adapt knowledge and understanding of nursing principles to a variety of situations, technical skills for performance of bedside nursing, appreciation for differences of people and for the worth of every individual, a desire to serve and help others, and readiness to conform to the requirements of nursing ethics and hospital policies.



PRACTICAL NURSING CURRICULUM

COURSE TITLE			Hours Per Week	Clinical Area	Quarter Hours Credit
			Class		
FIRST QUARTER					
PNE	1101	Fundamentals of Basic Nursing	9	6	3
PNE	1102	Body Structure and Function	5	2	0
PNE	1103	Vocational Adjustments Including Communicative Skills	3	0	0
PSY	1100	Human Relations	2	0	0
			19	8	3
SECOND QUARTER					
PNE	1104	Medical-Surgical Nursing I	4	2	0
PNE	1105	Maternity Nursing I	3	2	0
PNE	1106	Pediatric Nursing I	2	2	0
PNE	1107	Clinical Experience (Medical, Surgical, Maternity, Pediatric)	0	0	20
			9	6	20
THIRD QUARTER					
PNE	1108	Medical-Surgical Nursing II	4	0	0
PNE	1109	Maternity Nursing II	3	0	0
PNE	1110	Pediatric Nursing II	4	0	0
PNE	1111	Pharmacology	1	0	0
PNE	1112	Clinical Experience (Medical, Surgical, Maternity, Pediatric)	0	0	24
			12	0	24
FOURTH QUARTER					
PNE	1113	Medical-Surgical Nursing III	10	0	0
PNE	1114	Vocational Adjustments II	2	0	0
PNE	1115	Clinical Experience (Medical, Surgical, Maternity, Pediatric)	0	0	24
			12	0	24

Total Credit Hours Required 83

ADULT CONTINUING EDUCATION DIVISION

PROGRAMS IN

EVENING CREDIT: BUSINESS,
TECHNICAL, VOCATIONAL
EVENING NON-CREDIT: BUSINESS,
TECHNICAL, VOCATIONAL
APPRENTICESHIP

SUPERVISORY DEVELOPMENT TRAINING
SPECIAL INDUSTRIAL PROGRAMS
BASIC ADULT EDUCATION
ADULT HIGH SCHOOL DIPLOMA
CULTURAL DEVELOPMENT COURSES

GENERAL INFORMATION

The Adult Continuing Education Program of Catawba Valley Technical Institute is designed to meet the educational and self-fulfillment needs of adults living in the Catawba Valley Area. The Adult Program includes a diversity of class offerings that range from the simplest elementary instruction in reading and writing through advanced enrichment courses that mature adults require as they meet their daily problems as citizens, as homemakers, as wage earners, and as individuals in society. The Adult Continuing Education programs are designed to improve skills and knowledge and also to offer cultural enrichment and enlightened citizenship. Not only are courses offered at the Institute, but for groups in their own community as well. Because of the flexibility of CVTI's organization and its variety of courses, individuals of post-high school age, irrespective of their



background, training, and experience, are welcomed and encouraged to participate in adult continuing education classes.

Additional information concerning any program in this section may be obtained by contacting the Director of Adult Education at Catawba Valley Technical Institute, Hickory.

ADMISSION. Any adult living in the Catawba Valley area or counties surrounding CVTI is eligible to enroll in Adult Continuing Education classes. Adult, as used here, means one who is over eighteen years of age and is considered a part of the out-of-school population.

There are no formal educational requirements for admission in the majority of the Adult Continuing Education classes, with the exception of evening credit courses.

SCHEDULING OF CLASSES. Classes are normally scheduled on a quarterly basis with new classes beginning each September, December, March, and June. Specific announcements of course offerings and registration dates and places will be made through the local news media and by other suitable means, approximately three weeks before the beginning of each quarter. Adults interested in attending any of the courses may pre-register by mail, by telephone, or by visiting the Institute. Applicants are accepted on a "first come, first served" basis. If a class is filled, a waiting list will be maintained. The individual will then be notified when the course is next offered.

Ordinarily, a course may be offered when a minimum of fifteen persons enroll for the course. CVTI reserves the right to cancel any course where a sufficient number of people fail to register. Late registration will be permitted until the class meets the second week.

New classes, away from the campus, may be established whenever a sufficient number of students in a given community show interest in having classes taught in their community.

The majority of classes are offered one or two evenings each week between the hours of 6:00 p.m. and 10:00 p.m., Monday through Thursday. Whenever possible all classes will begin at the same time during a given quarter.

ATTENDANCE. Adults are expected to attend class regularly. Individual attendance records are maintained and permanently retained. In the Adult Continuing Education classes students must be present at least eighty (80) per cent of the class sessions to get credit for the course.

TUITION AND FEES. No tuition or fees are charged for non-credit adult continuing education classes. The majority of all CVTI adult classes

are offered to the general public free of charge. Candidates for the Adult High School Diploma, however, are charged a testing fee of \$1.00 per test to take four beginning-of-course tests and, if necessary, four end-of-course tests. Except in the Adult Elementary classes, the student will purchase his own books and personal supplies where required. Such books and supplies are available through the Institute bookstore. When classes meet outside CVTI, the Institute bookstore makes it possible for books to be purchased at the class location.

CERTIFICATES. Certificates are given for the satisfactory completion of non-credit adult classes.

FACULTY. In the Adult Continuing Education classes as in all other CVTI training, quality instruction is primary. Thus, the best qualified instructors available are sought and utilized. On the elementary and high school levels all instructors are certified to teach such classes. Consideration of educational background, training, practical experience, skills, and interest help assure the use of qualified instructors in all subject areas.

DIRECTED STUDIES LABORATORY

Through the Directed Studies Laboratory programmed instructional materials are available in more than forty subjects. Included are numerous business, data processing, English, foreign language, psychology, reading, mathematics, science, electronics, and social study courses.

Among recent educational innovations, programmed courses allow the student to study at his own rate of speed. He studies by himself rather than in the normal classroom situation.

The student may adjust study time in the Directed Studies Laboratory to meet his own convenience and schedules. One sets his own study sessions and attends as many days and hours per week as he can attend. Enrollees may begin courses at any time during the quarter and may undertake as many subjects as desired.

The Directed Studies Laboratory Coordinator helps the student (1) locate the level of instruction at which the student can learn by himself; (2) formulate the sequence of courses to be taken; and (3) assure himself that he is making satisfactory progress.

Students may enroll for numerous reasons—to prepare for high school equivalency examinations; to make up admissions deficiencies for technical institutes and colleges; to reduce specific educational weaknesses; to upgrade themselves for job promotion; to reinforce other courses of study; or simply for personal satisfaction.

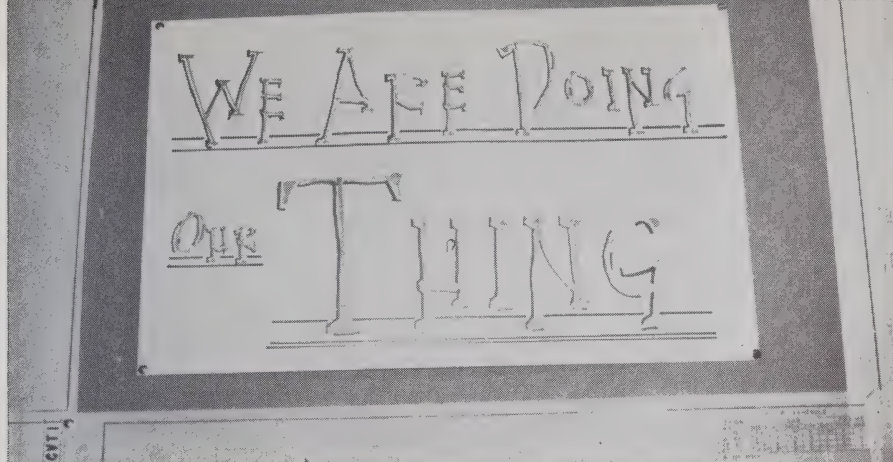
There are no admissions requirements or fees for study in the Directed Studies Laboratory.

EVENING CREDIT: BUSINESS, TECHNICAL, AND VOCATIONAL COURSES

In the Fall Quarter, 1967, CVTI began offering curriculum credit courses during the evening hours. Courses satisfactorily completed in the business and technical curricula will earn credit toward the Associate in Applied Science Degree. Courses satisfactorily completed in the trade curricula will earn credit toward a diploma in the vocational area of training.

The following guidelines will be followed pertaining to these courses:

1. Any courses advertised in the catalog may be offered if sufficient demand exists and suitable arrangements can be made.
2. Courses will follow the course number and description as outlined in the catalog.
3. The number of hours a course meets per week may be altered for the convenience of CVTI and the students. However, the specified contact hours must be met before credit is given.
4. All instructors used for credit courses will meet the same qualifications as day instructors.
5. Grades, reports, attendance regulations, and classroom activities will follow the procedures as outlined in the catalog.
6. Tuition will be charged at the rate of \$2.50 per credit hour with a quarterly maximum of \$32.00.



7. The admission procedures will be the same as for day courses except for the fact that a student may take a maximum of 18 credit hours within a program before officially being accepted in that program.

A list of curriculum credit courses is included in the schedule of evening classes published at least three weeks prior to the beginning of each quarter.

EVENING NON-CREDIT: BUSINESS, TECHNICAL, AND VOCATIONAL COURSES

Non-credit vocational, technical, and business evening courses are designed to serve adults who are employed or are seeking employment at the skilled, technical and sub-professional levels. Any adult 18 years of age or older who needs training or re-training or who otherwise profits from the proposed courses may be enrolled. Students who are employed normally attend training during their non-working hours to increase their skills and understandings; to improve their competency; and to qualify for advancement.

Examples of non-credit upgrading courses include: Practical Hydraulics, FCC License Preparation, Small Gasoline Engine Servicing, Alternator Servicing, Basic Electricity, Speed Reading, Stenocript, Plant Propagation, Farm Records and Income Taxes, Slide Rule, and National Electric Code.

APPRENTICESHIP COURSES

Catawba Valley Technical Institute offers related classroom training for Bricklaying, Carpentry, and Plumbing apprentices. These courses, co-sponsored by CVTI and the local apprenticeship committees, are scheduled to meet the requirements of the apprenticeship training programs.

SUPERVISORY DEVELOPMENT TRAINING

As one answer to business, industry, and government needs for better supervisors, CVTI offers the Supervisory Development Training Program.

SDT is an extension service with classes held on campus and in local industrial plants. The program offers to both small and large organizations a valuable source of in-service and up-grading instruction in the principles of supervision.

The SDT program consists of more than twenty short courses from which one may select and plan an appropriate training program. Examples of SDT courses include: Principles of Supervision, Human Relations, Effective Communications, Work Measurement, Job Methods, Creative Thinking, and Industrial Safety and Accident Prevention.

SPECIAL INDUSTRIAL PROGRAMS

The function of the CVTI Extension Program is to offer industry and other interested groups and/or individuals an opportunity to obtain classes held on premises away from the Institute.

Classes may be in the immediate area in which the industry is engaged. The purpose of the course may be that of pre-employment training, on-the-job training, or the upgrading of the skills of present employees.

In addition, special classes may be developed for specific job training of personnel for a new industry coming into the area.

Because of the flexibility of the programs, courses are tailored to specific group needs. New programs are initiated as the need is indicated by surveys, interviews and sufficient enrollment in individual classes. Classes are scheduled at the time and place convenient to the interested group or individual initiating the class inquiry.

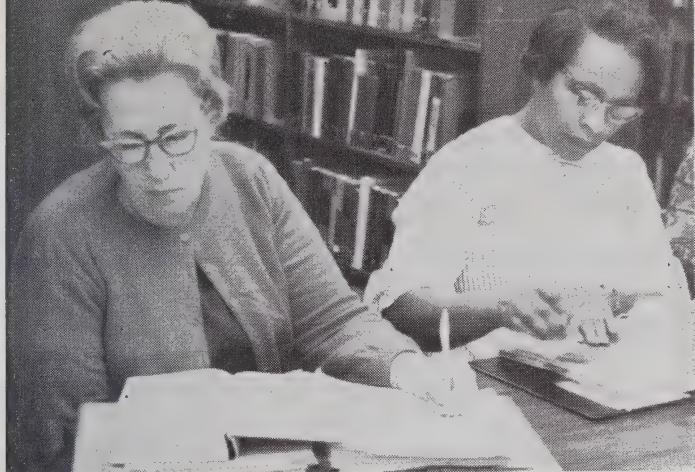
There is no charge to the student or the businesses for such courses. The potential class, however, must have a minimum of ten students.

For assistance in developing extension classes, inquiries and requests are welcomed by the CVTI Director of Extension Programs.

BASIC ADULT EDUCATION

Adult Elementary (Basic) Education is a program designed to assist adults who wish to improve their skills in oral and written communication or for adults who wish to learn to read and write. Elementary studies include reading, writing, spelling, arithmetic, social studies, health, listening and talking, and homemaker education.

All materials used have been especially prepared with emphasis on individual needs and interests. Classes meet twice a week, three hours per session, in the local communities where there is a sufficient number of



interested adults. Classes have been organized in Catawba, Alexander, and Iredell counties in order that adults may enroll in classes near their home.

Adult elementary classes are organized in two groups: Group I, grades one through four; and Group II, grades five through eight. Every adult is tested to determine whether he will be placed in Group I or Group II.

In Group I the basic fundamentals of reading, writing, and arithmetic are stressed. Some basic science and social studies are introduced at this level. The course of study is designed to bring adults to a functional level whereby individual study is possible.

Group II is a continuation of the first level with more individual study and a greater scope of subject matter including science and social studies. More emphasis is also placed on English and math. With the completion of Group II, the adult should be equipped to enroll in the Adult High School Diploma Program.

ELEMENTARY CLASS LOCATIONS. In Catawba County classes meet at St. Stephens Elementary School, Johnson Home, Banoak School, Rhoneys School, Ridgeview School, Newton Central School, Catawba Rosenwald School, Thomas Chapel, Catawba County Prison Camp, and the CVTI Directed Studies Laboratory.

In Alexander County, classes meet at Taylorsville High School.

Iredell County classes meet at Statesville High School, the Iredell County Vocational Workshop, and Mooresville High School.

ADULT HIGH SCHOOL DIPLOMA COURSES

The Adult High School Diploma Program is designed to give mature adults who have less than a twelfth grade education another opportunity to earn a high school diploma. The primary purposes of this program are

to improve reading skills, to strengthen weaknesses in the educational background, and assure a minimum of knowledge in English, mathematics, science, and social studies.

CVTI sponsored high school classes do not operate on a unit system. To be eligible for the Adult High School Diploma, each student must demonstrate satisfactory proficiency in the four subject areas. Proficiency is shown by meeting required scores on English, Mathematics, Science, and Social Studies selected standardized achievement tests. These tests are described below.

CLASS LOCATIONS AND SCHEDULE. Adult High School classes are offered at Catawba Valley Technical Institute, Taylorsville High School and Statesville Senior High School. At CVTI classes meet two hours per night on Monday and Wednesday nights between 6:00 p.m. and 10:00 p.m. At Taylorsville High and Statesville High Schools, classes are scheduled on Monday and Thursday nights between 6:00 p.m. and 10:00 p.m.

TESTING. Adults seeking the Adult High School Diploma are required to take standardized achievement tests in English, Math, Social Studies, and Science. Adult students are placed in the learning environment according to the results of the preliminary testing. Tests are given at the beginning and end of courses in each of the four subject areas mentioned above. Students making satisfactory scores on the beginning-of-course tests will not be required to complete classes. If all four tests are passed, the candidate will be recommended to the cooperating Board of Education to receive the Adult Diploma.

Candidates who fail to make satisfactory scores on beginning-of-course tests must satisfactorily complete the course in that subject area. At the end of the course, the student may again take the test. When, in this manner, the adult student makes a satisfactory score in the four areas of study, he is recommended for the Adult Diploma.



End-of-course tests are given at the center where the adult student takes classes. Beginning-of-course tests are given only at CVTI once a quarter and are announced through news media.

CLASS LOAD. No adult may enroll for more than two high school courses during an eleven-week quarter. Students meet classes for forty-four hours during each eleven weeks. Each class meets twice weekly and two hours per meeting.

FEES. Candidates for the Adult High School Diploma are charged a testing fee of \$1.00 per test and must purchase books for any course taken. No other fees or charges are made. Testing fees are payable in advance at the Institute.

DIPLOMAS. The Catawba County Board of Education, the Alexander County Board of Education, and the Statesville City Board of Education are cooperating with CVTI in the earned Adult High School Diploma Program. All High School Diplomas are issued by one of the cooperating boards of education.

CULTURAL DEVELOPMENT CLASSES

To complete the total adult education program at CVTI, numerous enrichment and culture classes are offered. Non-credit classes are available in conversational foreign languages, public speaking, reading improvement, economics, sociology, civics, civil defense, current affairs, government, problems of democracy, history, education for parenthood, home economics, sewing, physical fitness for women and men, flower arranging, leadership training, consumer education, family finance, creative arts, investments, home decoration, and family life.

To fulfill the need for avocational courses, CVTI offers classes in creative writing, writing for publication, art, ceramics, leathercraft, lapidary art, ham radio techniques, photography, and welding.

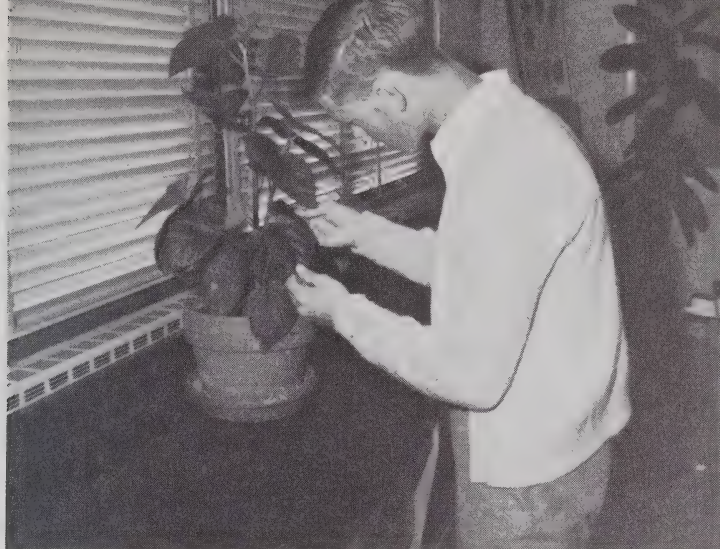
The majority of adult non-credit courses are evening classes. An occasional class, however, is held in the morning or afternoon for the convenience of an interested group of adults.

COURSE DESCRIPTIONS

AGRICULTURAL, BUSINESS, ENGINEERING, FURNITURE PRODUCTION, AND VOCATIONAL DIVISIONS

AGRICULTURE

		Class	Lab.	Credit
AGR 104	Introduction to Agricultural Economics	3	2	4
An introduction to economics, the functions of the economic system and agriculture's role in the economy. A review of the functions of the manager and an introduction to the principles he uses in making decisions to adjust to changing conditions. Analysis of the main sources of changes which affect agricultural firms. Prerequisite: None.				
AGR 125	Animal Science	5	2	6
An introductory animal science course covering the fundamental principles of livestock production. A study of the animal body and the basic principles of reproduction, genetics, growth, fattening, digestion, along with the selection, feeding, improvement, processing and marketing of livestock. Prerequisite: None.				
AGR 127	Animal Nutrition	5	2	6
A course dealing with the principles of nutrition and their application to feeding practices of cattle, horse, sheep and swine production in North Carolina. Prerequisite: AGR-125.				
AGR 150	General Horticulture	3	2	4
A course dealing with horticulture principles and the application of plant science fundamentals to horticultural practices. Prerequisite: None.				
AGR 151	Plant Materials, Identification, and Use I	2	4	4
Identification, adaptation and use of ornamental plants. Prerequisite: AGR 170.				
AGR 152	Plant Propagation	2	3	3
A course dealing with the fundamental principles involved in plant propagation, with emphasis in the practical knowledge of useful techniques for propagating plants. Prerequisite: AGR 150.				
AGR 153	Plant Materials, Identification, and Use II	2	2	3
A course primarily designed to study the woody plants grown in nurseries for landscape purposes, but will also include those found in woodlands and fields in North Carolina. Identification, culture and uses of selected evergreens and deciduous shrubs will be covered. Prerequisite: AGR 170.				
AGR 154	Ornamental Plant Protection	3	4	5
A review of the basic principles of entomology and plant pathology. Emphasis on the identification and practical methods of control of pests that attack ornamental plants; insects, diseases, weeds and rodents. Prerequisite: AGR 170.				
AGR 155	Floriculture	3	2	4
Culture and use of commercial flowering plants. Emphasis on flowering pot plants but includes foliage plants, bulbs, and house plants of the florist business. Principles of floral design. Prerequisite: AGR 170.				



	Class	Lab.	Credit
AGR 170 Plant Science	5	2	6
An introductory general botany and crop science course covering the fundamental principles of the reproduction, growth, functions, and development of seed bearing plants with application to certain commercially important plants in North Carolina. Prerequisite: None.			
AGR 180 General Poultry Science	3	2	4
An introduction to the science of poultry production. The major phases of the study include the history of the poultry industry; the anatomy and physiology of the chicken; the breeds and varieties; the breeding principles; the principles of incubation, brooding, rearing, feeding, housing and management; marketing poultry products; and the science of disease and parasite prevention and control. Prerequisite: None.			
AGR 185 Soil Science and Fertilizers	5	2	6
A course dealing with basic principles of efficient classification, evaluation, and management of soils; care, cultivation, and fertilization of the soil, and conservation of soil fertility. Prerequisite: None.			
AGR 187 Fertilizers and Lime	3	2	4
A review of the source, function, and the use of the major and minor plant food elements; commercial fertilizer ingredients; soil acidity, liming materials; application of fertilizer and liming materials. Prerequisite: None.			
AGR 201 Agricultural Chemicals	5	2	6
A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control. Prerequisite: None.			
AGR 204 Farm Business Management	5	2	6
A review of the functions of the manager of a business firm and the problems he faces. Development of the concept of planning by both partial and complete budgeting. Review			

	Class	Lab.	Credit
<p>of the concepts of costs and the length of run in production. Practice in preparing enterprise budgets as an aid in choosing what to produce. Use of partial budgeting to find the least cost production procedure. Analysis of production data to select the level of production that yields the most net revenue. Relationship between size, efficiency and income of a farm. Review of procedures for evaluating the efficiency of the manager. Prerequisite: AGR 104.</p>			
AGR 205 Agricultural Marketing	5	2	6
<p>An analysis of the functions of marketing in the economy and a survey of the problems marketing faces. A review of the market structure and the relationship of local, terminal, wholesale, retail and foreign markets. Problems in the operations of marketing firms including buying and selling, processing, standardization and grading, risk taking and storage, financing, efficiency, and cooperation. Discussion of procedures of marketing such commodities as grain, cotton, livestock and tobacco. Prerequisite: AGR 104.</p>			
AGR 206 Agricultural Finance	3	0	3
<p>Analysis of the capital structure of modern commercial agriculture with emphasis on the sources of credit. A review of lending institutions, repayment schedules, and credit instruments. Practice in the procedure of evaluating farm resources with attention to information needed for resource valuation, appraisal forms and procedures, discounting and depreciation. Prerequisite: None.</p>			
AGR 209 Agricultural Prices	3	0	3
<p>An introduction to the functions of prices in our economic system and the effects of changing price levels. The influence consumer demand has on prices through price and income elasticities. A review of the influences of cycles and timing of production along with an examination of the use of future commodity contracts. Application of the principles of price analysis to price control and parity programs. Familiarization with the various tools widely used in historical analysis and forecasting. Prerequisite: AGR 104.</p>			
AGR 218 Agricultural Mechanization	3	2	4
<p>A study of farm machinery management and labor-saving devices. The economics of selection and operation of farm machinery. Study and evaluation of feed grinders, and mixers, storage facilities, materials handling systems and other labor-saving devices. Prerequisite: None.</p>			
AGR 222 Farm Electrification	3	2	4
<p>A study of the basic principles and systems, and their application to agricultural production with emphasis on equipment for controlling the utilization of electricity. Prerequisite: None.</p>			
AGR 225 Dairy and Beef Production	5	2	6
<p>A study of the principles of selection, breeding, feeding, care and management of dairy and beef cattle. Prerequisite: AGR 125.</p>			
AGR 226 Swine Production	3	2	4
<p>Development of the swine production and marketing industries; principles and practices of selection, breeding, feeding, housing, marketing and management of swine. Prerequisite: AGR 125.</p>			
AGR 228 Livestock Diseases and Parasites	3	2	4
<p>A course dealing with the common diseases and parasites of livestock; sanitation prac-</p>			

	Class	Lab.	Credit
tices and procedures with emphasis on the cause, damage, symptoms, prevention and treatment of parasites and diseases, and management factors relating to disease and parasite prevention and control. Prerequisite: AGR 125.			
AGR 250 Fruit and Vegetable Production	3	2	4
A course dealing with the fruit and vegetable production. A study of the importance and principles of production and marketing of the major vegetable crops. Identification and methods of production and marketing of the principal tree and small fruits. Prerequisite: AGR 170.			
AGR 251 Landscape Design	2	4	4
The principles and practices of landscape design with application to selected landscape problems. On-the-job sketching and plan presentation as done by the nurseries. Planning of small home grounds as well as problems of design and construction dealing with grading, walls, steps, and other garden accessories. Prerequisite: AGR 151.			
AGR 252 Landscape Gardening	3	2	4
Maintenance of landscape areas including planting, pruning, fertilization and pest control. Landscape economics: costs, contracts, calculating areas, volumes, and plant quantities for landscape projects. Selection and use of materials in landscape construction. Prerequisite: AGR 151.			
AGR 254 Greenhouse Management	3	2	4
Fundamentals of and practices in greenhouse plant production. Prerequisite: AGR 170.			
AGR 255 Arboriculture	3	2	4
Principles and practices of selection, use establishment and care of shade and ornamental trees. Prerequisite: AGR 151.			
AGR 257 Nursery Management	3	2	4
Retail and wholesale nursery practices. Layouts, selling, handling of plant materials. Commercial nursery stock production dealing with plant growth patterns and plant responses in relation to soils, water, fertility, planting techniques and distances, top and root pruning. Plant production cycles, rotations, and kind of treatment for economy production. Prerequisite: AGR 151.			
AGR 258 Turf Management	2	2	3
A study of turf grasses including identification, seeding establishment, use and maintenance. Prerequisites: AGR 170; AGR 185.			
AGR 272 Tobacco Technology	3	2	4
A review of the economic importance of tobacco in North Carolina and a detailed study of all aspects of the production and marketing of tobacco with a brief look at the processing and manufacturing phases. Prerequisite: AGR 170.			
AGR 273 Grain Production and Marketing	3	0	3
A course covering the various phases of grain-crop production and marketing with emphasis on those of economical importance to North Carolina. Prerequisite: AGR 170.			
AGR 296 Agricultural Programs and Agencies	3	2	4
A review of the public agriculture programs and agencies that provide services for agricultural producers. The objectives, organization, functions and services of these organizations. Prerequisite: None.			



HEATING AND REFRIGERATION

	Class	Lab.	Credit
AHR 106 Architectural Mechanical Equipment	3	3	4
General study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code requirements pertaining to residential and commercial structures. Reading and interpretation of working drawings by mechanical engineers. Coordination of mechanical and electrical features with structural and architectural designs. Prerequisite: None.			
AHR 1101 Automotive Air Conditioning	2	3	3
General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system. Prerequisites: PHY 1101, PHY 1102.			

AUTOMOTIVE

AUT 1101 Internal Combustion Engine	3	12	7
Development of a thorough knowledge and ability in using, maintaining, and storing the various hand tools and measuring devices needed in engine repair work. Study of the construction and operation of components of internal combustion engines. Testing of engine performance; servicing and maintenance of pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing. Prerequisite: None.			
AUT 1102 Engine Electrical and Fuel Systems	5	12	9
A thorough study of the electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, and fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment of the fuel and electrical system. Prerequisite: None.			
AUT 1121 Braking Systems	3	3	4
A complete study of various braking systems employed on automobiles and light weight trucks. Emphasis is placed on how they operate, proper adjustment, and repair. Prerequisite: PHY 1102.			
AUT 1123 Automotive Chassis and Suspension Systems	3	9	6
Principles and functions of the components of automotive chassis. Practical job instruction in adjusting and repairing of suspension, and steering systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, and front end and alignment. Prerequisite: None.			

	Class	Lab.	Credit
AUT 1124 Automotive Power Train Systems	3	9	6
Principles and functions of automotive power train systems: clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair. Prerequisites: PHY 1101, PHY 1102.			
AUT 1125 Automotive Servicing	3	9	6
Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the various component systems of the automobile. Troubleshooting of automotive systems, providing a full range of experiences in testing, adjusting, repairing and replacing. Prerequisites: AUT 1123, AUT 1121, AHR 1101, AUT 1101, AUT 1102.			
AUT 1145 Chassis and Suspension Systems	3	9	6
The principles involved in frame design, types of suspension, load weight distribution, types of steering, wheel alignment, and wheel balance are studied. The laboratory offers instruction in disassembly, inspection, reassembly, and adjustment of the components of frame and suspension systems. Prerequisite: None.			

BUSINESS

BUS 101 Introduction to Business	5	0	5
A survey of the business world with particular attention devoted to the structure of the various types of business organization, methods of financing, internal organization, and management. Prerequisite: None.			
BUS 102 Typewriting	2	3	3
Introduction to the touch typewriting system with emphasis on correct techniques, mastery of the keyboard, simple business correspondence, tabulation, and manuscripts. Prerequisite: None.			
BUS 103 Typewriting	2	3	3
Instruction emphasizes the development of speed and accuracy with further mastery of correct typewriting techniques. These skills and techniques are applied in tabulation, manuscript, correspondence, and business forms. Prerequisite: BUS 102 or equivalent. Speed requirement, 30 words per minute for five minutes.			
BUS 104 Typewriting	2	3	3
Emphasis is on production typing problems and speed building. Attention to the development of the student's ability to function as an expert typist, producing mailable copies. The production units are tabulation, manuscript, correspondence, and business forms. Prerequisites: BUS 103 or the equivalent. Speed requirement, 40 words per minute for five minutes.			
BUS 106 Shorthand	2	3	3
A beginning course in the theory and practice of reading and writing shorthand. Emphasis on phonetics, penmanship, word families, brief forms, and phrases. Prerequisite: None.			
BUS 107 Shorthand	3	2	4
Continued study of theory with greater emphasis on dictation and elementary transcription. Prerequisite: BUS 106 or the equivalent.			

	Class	Lab.	Credit
BUS 108 Shorthand	3	2	4
Theory and speed building. Introduction to office style dictation. Emphasis on development of speed in dictation and accuracy in transcription. Prerequisite: BUS 107.			
BUS 110 Office Machines	2	2	3
A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of the ten-key adding machines, full keyboard adding machines, and calculator. Prerequisite: None.			
BUS 112 Filing	3	0	3
Fundamentals of indexing and filing combining theory and practice by the use of miniature letters, filing boxes, and guides. Alphabetic, Triple Check, Automatic, Geographic, Subject, Soundex, and Dewey Decimal filing. Prerequisite: None.			
BUS 115 Business Law	3	0	3
A general course designed to acquaint the student with certain fundamentals and principles of business law, including contracts, negotiable instruments, and agencies. Prerequisite: None.			
BUS 116 Business Law	3	0	3
Includes the study of laws pertaining to bailments, sales, risk-bearing, partnership—corporation, mortgages, and property rights. Prerequisite: BUS 115.			
BUS 120 Accounting	5	2	6
Principles, techniques and tools of accounting, for understanding of the mechanics of accounting. Collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned. Prerequisite: MAT 110.			
BUS 121 Accounting	5	2	6
The second quarter of accounting includes notes receivable, accounts receivable, notes payable, accounts payable, depreciation, insurance, inventory methods, internal controls, payrolls, federal and state taxes. Emphasis is placed on recording, summarizing and interpreting data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems. Prerequisite: BUS 120.			
BUS 123 Business Finance	3	0	3
Financing of business units, as individuals, partnerships, corporations, and trusts. A detailed study is made of short-term, long-term, and consumer financing. Prerequisite: None.			
BUS 124 Business Finance	3	0	3
Financing, federal, state, and local government and the ensuing effects upon the economy. Factors affecting supply of funds, monetary and credit policies. Prerequisite: BUS 123.			
BUS 178 Traffic and Transportation	3	0	3
A introductory course covering the American transportation system. Emphasis is placed on developments leading to the legislative supervision of the carriers, freight traffic territories, traffic flow, freight classifications, freight rates, and freight claims. Prerequisite: None.			
BUS 179 Traffic and Transportation	3	0	3
A study of the construction and filing of tariffs, freight rates, terminal facilities, storage, weights, routing, warehousing, and material handling. Prerequisite: BUS 178.			

	Class	Lab.	Credit
BUS 181 Human Anatomy and Physiology	3	0	3
A study of the general plan of the human body and the nine systems. Designed for understanding how the body functions, moves and stands erect, distributes food and oxygen and removes waste and provides for survival. Prerequisite: None.			
BUS 183 Terminology and Vocabulary	3	0	3
To develop an understanding of the terminology and vocabulary appropriate to the course of study, as it is used in business, technical, and professional offices. Prerequisite: BUS 107.			
BUS 205 Advanced Typewriting	2	3	3
Emphasis is placed on the development of individual production rates. The student learns the techniques needed in planning and in typing projects that closely approximate the work appropriate to the field of study. These projects include review of letter forms, methods of duplication, statistical tabulation, and the typing of reports, manuscripts and legal documents. Prerequisite: BUS 104. Speed requirement, 50 words per minute for five minutes.			
BUS 206 Dictation and Transcription	3	2	4
Develops the skill of taking dictation and of transcribing at the typewriter materials appropriate to the executive course of study, which includes a review of the theory and the dictation of familiar and unfamiliar material at varying rates of speed. Minimum dictation rate of 100 words per minute required for five minutes on new material. Prerequisite: BUS 108.			
BUS 207 Dictation and Transcription	3	2	4
Covering materials appropriate to the course of study, the student develops the accuracy, speed, and vocabulary that will enable her to meet the stenographic requirements of business and professional offices. Minimum dictation rate of 110 words per minute required for five minutes on new material. Prerequisite: BUS 206.			
BUS 208 Dictation and Transcription	3	2	4
Principally a speed building course, covering materials appropriate to the executive course of study, with emphasis on speed as well as accuracy. Minimum dictation rate of 120 words per minute required for five minutes on new material. Prerequisite: BUS 207.			
BUS 210 Typing Office Practice	3	2	4
A course designed to familiarize the student with the forms and routines found in a typical business. Emphasis is placed upon correct procedures and adaptability to varying office methods. Prerequisite: BUS 205.			
BUS 211 Office Machines	2	2	3
Instructions in the operation of the bookkeeping-accounting machines, duplicating equipment, and the dictating and transcribing machines. Prerequisite: BUS 110.			
BUS 212 Machine Transcription—Business	1	2	2
A study and practice course in the use of transcribing machines in business dictation. Proficiency in word usage, correct grammar, and letter styles will be emphasized. Prerequisite: BUS 103.			
BUS 214 Secretarial Procedures	3	2	4
Designed to acquaint the student with the responsibilities encountered by a secretary during the work day. These include the following: receptionist duties, handling the			

	Class	Lab.	Credit
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mail, telephone techniques, travel information, telegrams, office records, purchasing of supplies, office organization, and insurance claims. Prerequisite: None.

BUS 215 Office Application	6	0	6
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During the sixth quarter only, students are assigned to work in a legal or professional office for six hours per week. The objective is to provide actual work experience for secretarial students and an opportunity for the practical application of the skills and knowledge previously learned, according to the legal course of study. Prerequisites: BUS 214, BUS 205, BUS 208, BUS 211.

BUS 217 Business Law	3	0	3
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A study of the powers, policies, methods, and procedures used by the various federal, state and local administrative agencies in promoting and regulating business enterprises. It includes a consideration of the constitutional and statutory limitations on these bodies and judicial review of administrative action. Prerequisite: BUS 116.

BUS 219 Credit Procedures and Problems	3	0	3
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Principles and practices in the extension of credit; collection procedures; laws pertaining to credit extension and collection are included. Prerequisite: BUS 120.

BUS 222 Accounting	5	2	6
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Partnership and corporation accounting and a thorough treatment of the field of general accounting, providing the necessary foundation for specialized studies that follow. The course includes, among other aspects, the balance sheet, income and surplus investments, and analysis of working capital. Prerequisite: BUS 121.

BUS 223 Accounting	5	2	6
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Additional study of intermediate accounting with emphasis on investments, plant and equipment, intangible assets and deferred charges, long-term liabilities, paid-in capital, retained earnings, and special analytical processes. Prerequisite: BUS 222.

BUS 225 Cost Accounting	3	2	4
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Nature and purposes of cost accounting; accounting for direct labor, materials, and factory burden; job cost, and standard cost principles and procedures; selling and distribution cost; budgets, and executive use of cost figures. Prerequisite: BUS 121.

BUS 227 Advanced Accounting	3	2	4
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Advanced accounting theory and principles as applied to special accounting problems, bankruptcy proceedings, estates and trusts, consolidation of statements, parent, and subsidiary accounting. Prerequisite: BUS 223.

BUS 229 Taxes	3	2	4
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Application of federal and state taxes to various businesses and business conditions. A study of the following taxes: income, payroll, intangible, capital gain, sales and use, excise, and inheritance. Prerequisite: BUS 121.

BUS 232 Sales Development	3	0	3
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A study of retail, wholesale and specialty selling. Emphasis is placed upon mastering and applying the fundamentals of selling. Preparation for and execution of sales demonstrations required. Prerequisite: None.



	Class	Lab.	Credit
BUS 233 Personnel Management	3	0	3
Principles of organization and management of personnel, procurement, placement, training, performance checking, supervision, remuneration, labor relations, fringe benefits and security. Prerequisite: None.			

BUS 235 Business Management	3	0	3
Principles of business management including overview of major functions of management, such as planning, staffing, controlling, directing, and financing. Clarification of the decision-making function versus the operating function. Role of management in business—qualifications and requirements. Prerequisite: None.			

BUS 237 Wholesaling	3	0	3
The development of wholesaling; present day trends in the United States. A study of the functions of wholesaling. Prerequisite: None.			

BUS 239 Marketing	5	0	5
A general survey of the field of marketing, with a detailed study of the functions, policies, and institutions involved in the marketing process. Prerequisite: None.			

BUS 243 Advertising	3	2	4
The role of advertising in a free economy and its place in the media of mass communications. A study of advertising appeals; product and market research; selection of media; means of testing effectiveness of advertising. Theory and practice of writing advertising copy for various media. Prerequisite: None.			

BUS 245 Retailing	3	0	3
A study of the role of retailing in the economy including development of present retail structure, functions performed, principles governing effective operation and managerial problems resulting from current economic and social trends. Prerequisite: None.			

BUS 247 Business Insurance	3	0	3
A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included. Prerequisite: None.			

	Class	Lab.	Credit
BUS 255 Interpreting Accounting Records	3	0	3
Designed to aid the student in developing a "use understanding" of accounting records, reports and financial statements. Interpretation, analysis, and utilization of accounting statements. Prerequisite: BUS 121.			
BUS 264 Business Statistics	5	0	5
This course is designed to give the student a basic understanding of statistical methods and procedures as applied to business. The development of the necessary mathematics is presented as business problems are explained. The course covers the following areas: statistical description, statistical induction, analysis of business change, and the relationship covering regression and correlation analysis, simple linear correlations, nonlinear, multiple, and partial correlation. Prerequisite: None.			
BUS 266 Budget and Record Keeping	3	0	3
The basic principles, methods, and procedures for preparation and operation of budgets. Special attention is given to the involvement of individual departments and the role they play. Emphasis on the necessity for accurate record keeping in order to evaluate the effectiveness of budget planning. Prerequisite: BUS 121.			
BUS 269 Auditing	3	2	4
Principles of conducting audits and investigations; setting up accounts based upon audits; collecting data on working papers; arranging and systemizing the audit, and writing the audit report. Emphasis is placed on detailed audits, internal auditing, and internal control. Prerequisite: BUS 223.			
BUS 271 Office Management	3	0	3
Presents the fundamental principles of office management. Emphasis on the role of office management including its functions, office automation, planning, controlling, organizing and actuating office problems. Prerequisite: None.			
BUS 272 Principles of Supervision	3	0	3
Introduces the basic responsibilities and duties of the supervisor and his relationship to superiors, subordinates, and associates. Emphasis on securing an effective work force and the role of the supervisor. Methods of supervision are stressed. Prerequisite: None.			
BUS 280 Traffic and Transportation	3	0	3
Stresses through-route and rates, milling in transit, technical tariff and rate interpretation, overcharges and undercharges, loss and damage, import and export tariff, classification committee procedure and rate committee procedures. Prerequisite: BUS 179.			
BUS 281 Traffic and Transportation	3	0	3
To acquaint the student with the application of the Interstate Commerce Act to practical transportation and the general procedure of requesting changes before the Interstate Commerce Commission. Prerequisite: BUS 280.			
BUS 284 Medical Terminology and Vocabulary	3	0	3
Greater emphasis on an understanding of the terminology and vocabulary appropriate to the medical course of study, as it is used in medical and professional offices. Prerequisite: BUS 183.			
BUS 285 ICC Law	3	0	3
Designed to aid the student in making a thorough analysis of the Interstate Commerce Act; review history of Act and related acts. Prerequisite: BUS 116.			

	Class	Lab.	Credit
BUS 286 ICC Law	3	0	3
A detailed study is made of the procedural policy involved in appearing before the Interstate Commerce Commission. Prerequisite: BUS 285.			
BUS 287 ICC Law	3	0	3
Devoted to case study of applications of the Interstate Commerce Act. Prerequisite: BUS 286.			
BUS 290 Motor Carrier	3	0	3
An introduction to special problems relating to tariffs and rates of motor carriers. Prerequisite: None.			
BUS 291 Motor Carrier	3	0	3
A continuation of special problems relating to tariffs, rates, circulars, pertaining to the Motor Carrier field. Prerequisite: BUS 290.			
BUS 295 Traffic Claims	3	0	3
Designed to provide knowledge about rights and liabilities of carriers, cosigners, and consignees; claims, their procedure, settlement, and prevention. Prerequisite: None.			
BUS 299 Traffic Management	3	0	3
Develops the purpose, function, and operation of traffic management; illustrates the differences in various areas of traffic; and shows relationship to other business operations. Prerequisite: None.			
BUS 1103 Small Business Operations	3	0	3
An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations. Prerequisite: None.			
BUS 1105 Industrial Organizations	3	0	3
Methods, techniques, and practices of modern management in planning, organizing and controlling operations of a manufacturing concern. Introduction to the competitive system and the factors constituting product cost. Prerequisite: None.			

CHEMISTRY

CHM 101 Chemistry	4	2	5
Study of the physical and chemical properties of substances, chemical changes; elements, compounds, gases, chemical combinations; weights and measurements; theory of metals; acids, bases, salts, solvents, solutions, and emulsions. In addition, study of carbohydrates; electrochemistry, electrolytes, and electrolysis in their application of chemistry to industry. Prerequisite: None.			

CIVIL ENGINEERING

CIV 101 Surveying	2	6	4
Theory and practice of plane surveying including taping, differential and profile leveling, cross sections, earth work computations, transit, standia, and transit-tape surveys. Prerequisites: MAT 102, DFT 107.			

	Class	Lab.	Credit
CIV 102 Surveying	2	6	4
Triangulation of ordinary precision; use of plane table, calculation of areas of land; land surveying; topographic surveys and mapping. Prerequisite: CIV 101. Corequisites: MAT 102, DFT 102.			
CIV 105 Architectural Materials and Methods	3	3	4
Materials used in the construction of architectural structures will be studied. Field trips to construction sites and study of manufacturer's specifications for materials. Properties and standard sizes of structural materials, and construction techniques are included. Prerequisite: None.			
CIV 114 Statics	5	0	5
Forces, resultants, and types of force systems, moments, equilibrium of coplanar forces by analytical and graphic methods; stresses and reactions in simple structures; equilibrium of forces in space, static and kinetic friction; center of gravity, centroids, and moment of inertia. Prerequisite: MAT 102.			
CIV 201 Properties of Engineering Materials	2	3	3
Study and testing of the properties of ferrous and nonferrous metals, timber, stone, clay products, bituminous cementing materials; load and strain measurements; behavior of materials under load; qualities other than strength; control of the properties of the materials; non-destructive tests. Prerequisite: PHY 101. Corequisite: CIV 216.			
CIV 202 Properties of Soils	2	3	3
Study of soil types and their physical properties; mechanical analysis and tests of soils; techniques of subsurface investigation; earth pressure theories; bearing capacity; stability of slopes; hydrostatics of ground water; methods of compaction and consolidation. Prerequisite: CIV 216.			
CIV 216 Strength of Materials	3	2	4
Fundamentals stress and strain relationship; torsion; shear and bending moments; stresses and deflections in beams; introduction to statically indeterminate beams; columns; combined stresses. Prerequisites: CIV 114, MAT 103.			
CIV 217 Construction Methods and Equipment	3	2	4
Excavating methods and equipment used in building and highway construction; pile driving; construction techniques and equipment used in reinforced concrete buildings, bridges, lift-slabs, thin-shells and folded plates, erection methods and equipment of structural steel buildings and bridges; carpentry in house and heavy timber construction; construction safety. Field inspection trips. Prerequisites: DFT 102, CIV 102.			
CIV 218 Plain Concrete	3	3	4
Study and testing of the composition and properties of concrete including cementing agents, aggregates, admixtures, and air-entrainment; design and proportioning of concrete mixes to obtain pre-determined strengths and properties; methods of placing and curing concrete; standard control tests of concrete. Corequisite: CIV 201.			
CIV 219 Steel and Timber Construction	3	2	4
Analysis and basic design of steel beams, tension members, columns, and riveted, high strength bolted, welded connections; study of plate girders, industrial building roofs and vents, continuous spans, lightweight steel construction; use of American Institute of			

	Class	Lab.	Credit
Steel Construction Manual; introduction to rigid frames and plastic design in steel. Design of timber members and their connections. Field inspection trips. Prerequisite: CIV 216.			

CIV 221 Reinforced Concrete Construction	3	2	4
Analysis and design of reinforced concrete beams, floor systems, and columns. Use of CRSI Design Handbook. Introduction to ultimate strength design. Principles of prestressed and precast concrete. Field inspection trips. Prerequisite: CIV 216.			

CYBERNETICS

CYB 201 Electromechanical Systems	3	2	4
An introduction to electromechanical systems and their components. Basic measuring and control devices, including fluid power, electrical, electronic, mechanical and optical devices. Prerequisites: ELN 105, MAT 103.			

CYB 202 Electromechanical Systems	3	6	5
A study of the fundamental components of many electromechanical systems—synchros, resolvers, servometers, and generators, choppers, recorders, plotters, servo mechanisms, printers, digital readout, teletype, numerical control devices. Laboratory includes study in the maintenance of electromechanical devices. Prerequisite: CYB 201.			

CYB 203 Electromechanical Systems	3	6	6
Applications of electromechanisms in systems design. Introduction to closed loop operation. System analysis. Process and machine tool controllers of the electrical, hydraulic, and pneumatic types. Laboratory provides study in the systems approach to the utilization of electromechanical devices. Prerequisite: CYB 201.			

DATA PROCESSING

EDP 102 Functional Wiring Principles	2	0	4
The fundamental principles of wiring necessary to perform basic machine functions of printing, punching, comparing and selection. A series of laboratory experiments support the theoretical aspects of this course. Prerequisite: EDP 104.			

EDP 104 Introduction to Data Processing Systems	3	2	4
Fundamental concepts and operational principles of data processing systems, as an aid in developing a basic knowledge of computers, prerequisite for all programming courses. Prerequisite: BUS 102 or equivalent.			

EDP 105 Procedure Writing, Flow Charting, and Block Diagraming	3	2	4
Designed to provide the student with concepts and principles of block diagraming and flow charting. The student will be adequately prepared to write job descriptions. It also enables the student to make block diagrams of existing data processing installations and to block diagram new jobs. Prerequisite: EDP 102.			

EDP 201 Introduction to Computers	3	2	4
This is a basic introduction to computers. It will give the student a fundamental knowledge of computers, what they are, and how they work. It will also cover the core, card, disk, tape, transmitter, software and hardware. Prerequisite: EDP 105.			

	Class	Lab.	Credit
EDP 210 Report Program Generator (RPG) Programming	3	2	4

This course will provide the student with sufficient knowledge to program and utilize the RPG language at any level. The student will analyze, evaluate and program commercial applications. Prerequisite: EDP 201.

EDP 211 Report Program Generator (RPG) Programming	3	2	4
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This course is a continuation of EDP 210. Prerequisite: EDP 210.

EDP 215 PL/1 Language	2	4	4
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This course is designed to give the student an introduction to the PL/1 language and to provide him with basic skills in the use of this language. The course will provide only basic knowledge of PL/1 and the student will be able to do limited programming utilizing the PL/1 language. Prerequisite: EDP 211.

EDP 220 Systems Analyst Project	1	4	3
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This course is a summation of the skills and knowledge learned which will now be demonstrated in a practical application. Each student will be required to complete one separate project with minimum supervision from the instructor. Prerequisite: EDP 210.

DESIGN

DES 116 Design Philosophy	3	0	3
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This course will consist of selected readings and discussions of viewpoints, philosophies, and observations of leading designers. The existing dilemma concerning design ethics shall be incorporated. Prerequisite: None.

DES 117 Visual Design I	2	6	4
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A study of design fundamentals to include the elements of design construction, the principles which determine the organization and relationship of these elements, and the analysis of design. Application of these fundamentals in drawing and elementary design problems leading to an understanding of form and space, primarily two-dimensional. Prerequisite: None.

DES 118 Visual Design II	3	3	4
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An extension of Visual Design I dealing with problems of two-dimensional manipulation and delineation of space. Particular emphasis is placed on the nature of color, color chords, organization, composition, optical and psychological implications. Prerequisite: DES 117.

DES 216 Tectonic Design	3	3	4
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An exploration of three-dimensional design using a variety of materials to define space and mass as they relate to function and aesthetics. Experiments in construction and ornamentation will be an integral part of the course. Prerequisite: DES 117.

DES 225 Furniture Styling	2	3	3
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A comprehensive study of the periods and styles of furniture, from the Gothic Period to contemporary innovations, including factors which influenced their development. Methods of styling and decorating will be incorporated with the basic principles of design. Prerequisite: None.

	Class	Lab.	Credit
DES 239 Rendering	2	3	3

This course will include techniques of heightening the three-dimensional effects of both pictorial and orthographic drawings through the use of variation in value, texture, and color. Additional depth of experience will be gained in preparing presentation pictorials. Prerequisite: DFT 105.

DES 245 Anatomical Relationships	5	0	5
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This course is a comprehensive study of the human form as it relates to objects and activities of work, family living, and circulation. Emphasis is placed on the implications found for furniture and interior design. Prerequisite: None.

DES 250 Interior Planning and Display	3	3	4
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This course is a study of architectural considerations, furniture grouping, correlation of finish, fabrics, and accessories as related to customer services and show room planning. Prerequisites: DES 118, DFT 105, DES 239, DES 245.

DRAFTING

DFT 101 Technical Drafting	2	6	4
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The field of drafting is introduced as the student begins study of drawing principles and practices for print reading and describing objects in the graphic language. Basic skills and techniques of drafting included are: use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, orthographic instrument drawing of principle views, and standards and practices of dimensioning. The principles of isometric, oblique, and perspective are introduced. Prerequisite: None.

DFT 102 Technical Drafting	2	6	4
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The application of orthographic projection principles to the more complex drafting problems, primary and secondary auxiliary views, simple and successive revolutions, and sections and conventions will be studied. Most important is the introduction of the graphical analysis of space problems. Problems of practical design elements involving points, lines, planes, and a combination of these elements shall be studied. Dimensioning practices for "details" and "working drawings," approved by the American Standards Association, will also be included. Introduction is given to intersections and developments of various types of geometrical objects. Prerequisite: DFT 101.

DFT 103 Technical Drafting	2	6	4
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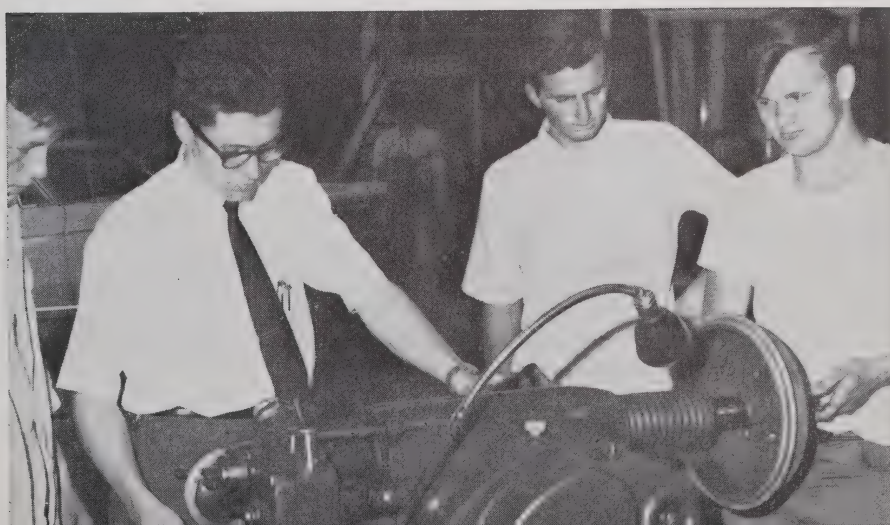
Intersection and developments and their practical solutions. Where applicable, model solutions accompany the problems. The various techniques employed to produce and render isometric and oblique drawings, isometric, dimetric and trimetric projections, will be included. Prerequisite DFT 102.

DFT 105 Technical Drafting	2	6	4
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Intersections and developments and their practical applications to pattern drawing, with model solutions. Mechanical and freehand techniques used to produce isometric, dimetric, trimetric, and perspective drawings incorporating basic rendering techniques. Charts, graphs and other methods of visual presentation are included. Prerequisite: DFT 102.

	Class	Lab.	Credit
DFT 106 Architectural Drafting	2	6	4
A course designed to provide fundamental knowledge of the principles of drafting. Basic skills and techniques of drafting included are: use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, orthographic instrument drawing of principal views. Projection problems dealing with principles of descriptive geometry, involving points, lines, planes, and connectors. The principles of isometric, oblique, and perspective drawings are introduced. Prerequisite: None.			
DFT 107 Architectural Drafting	2	6	4
Development of techniques in architectural lettering, symbols, and their interpretation; dimensioning, freehand and instrument drafting. Drawing of construction details, using appropriate material symbols and connections. Sections, scale details and full-size details will be prepared from preliminary sketches. Applications of descriptive geometry are used in visualization and analytical solutions of the drafting problems involving auxiliary views, intersections and developments. Prerequisite: DFT 106.			
DFT 108 Architectural Drafting	0	9	3
An approach in depth to the study of architectural drafting. Development of techniques in architectural lettering, dimensioning, freehand sketching and instrument drawing. Drawings of construction details, using appropriate material symbols and conventions. Working drawings, including plans, elevations, sections, scale details and full-size details will be prepared from preliminary sketches. Prerequisites: DFT 107, CIV 106, CIV 105.			
DFT 201 Technical Drafting	2	6	4
Applications and constructions of charts, graphs, and nomographs in engineering and technical data. Screw threads, springs, keys, rivets, piping, and welding symbols, methods of representing and specifying will be covered. Basic mechanisms of motion transfer, gears and cams, will be studied and drawn with emphasis on methods of specifying, calculating, dimensions, and delineating. Prerequisite: DFT 103.			
DFT 204 Descriptive Geometry	2	4	4
Graphic analysis of space problems involving points, lines, planes, connectors, and a combination of these. Practical design problems will be stressed with analytical verification where applicable. Visualization shall be stressed on every problem. Prerequisites: DFT 102, MAT 102.			
DFT 205 Design Drafting I	2	6	4
Basic design is introduced in the study of motion transfer mechanisms as they relate to power trains. Principles of design sketching, design drawing, layout drafting, detailing from layouts, production drawings and simplified drafting practices constitute areas of study. Types and methods of specifying materials and workmanship are an integral part of the course. Prerequisites: DFT 204, MAT 102, PHY 102.			
DFT 206 Design Drafting II	2	6	4
Research to solve a problem in design by consulting various manuals, periodicals, and through laboratory experiments. A written technical report, preliminary design sketches, layout drawings, detail drawings, assembly and sub-assembly drawings, pictorial drawings, exploded pictorial assembly, patent drawings and specifications are required as a part of the problem. Prerequisites: DFT 205, DFT 201.			

	Class	Lab.	Credit
DFT 211 Mechanisms	3	2	4
Mathematical and drafting room solutions of problems involving the principles of machine elements. Study of motions of linkages, velocities and acceleration of points within a link mechanism; layout methods for designing cams, belts, pulleys, gears and gear trains. Prerequisites: DFT 201 and 204, MAT 103, PHY 106.			
DFT 212 Jig and Fixture Design	2	6	4
Commercial standards, principles, practices and tools of jig and fixture design. Individual project and design work to acquaint students with the types of jigs and fixtures. Prerequisite: DFT 205, DFT 211.			
DFT 220 Architectural Drafting	2	9	5
Drawing of structural plans and details as prepared for building construction including steel, concrete, and timber structural components. Appropriate details and drawings necessary for construction and fabrication of structural members. Reference materials will be used to provide the draftsman with skills and knowledge in locating data and in using handbooks. Prerequisite: DFT 108.			
DFT 221 Architectural Drafting	2	9	5
Drawing of plans and details as prepared for mechanical equipment such as air conditioning, plumbing and electrical systems by using appropriate symbols and conventions. Consideration is given to coordination of mechanical and electrical features with structural and architectural components. Prerequisite: DFT 220.			
DFT 222 Architectural Drafting	2	9	5
Preparation of the complete set of working drawings for the architectural structure. Preparation of millwork drawings, cabinets and built-in equipment detail drawings, and door, window, and room schedules. Site and landscaping plans will be studied and drawn. Final assembly of the complete document for construction purposes will be made. Prerequisites: DFT 221, CIV 101, DFT 235.			
DFT 230 Structural Drafting	2	6	4
A concentrated study and drawing of structural plans, details and shop drawings of the structural components of buildings to include steel, reinforced concrete, and timber structures. Appropriate symbols, conventions, dimensioning practices, and notes as used by the draftsman will be included. Emphasis will be placed on drafting of appropriate drawings for fabrication and erection of the structural components. Prerequisites: DFT 220, CIV 105.			



	Class	Lab.	Credit
DFT 231 Architectural Mechanical Equipment Drafting	2	6	4
A detailed study of mechanical equipment and preparation of plans and detail drawings as prepared by the mechanical engineering consultant or contractor for the architectural structure. Heating and air conditioning, lighting and electrical, plumbing and other mechanical equipment as necessary for construction will be included in this study. Emphasis will be placed on drafting techniques used in preparing appropriate drawings and details. Prerequisites: DFT 221, AHR 106.			
DFT 233 Office Practice Seminar	2	0	2
A study of the professional relationship of the architectural firm in relation to clients, contractors, suppliers, consultants and other architects. Ethics of the profession as applicable to the draftsman's roll in the architectural firm will be stressed. Prerequisite: None.			
DFT 235 Codes, Specifications and Contract Documents	3	3	4
A study of building codes and their effect in relation to specifications and drawings. The purpose and writing of specifications will be studied along with their legal and practical application to working drawings. Contract documents will be analyzed and studied for the purpose of client-architect-contractor responsibilities, duties and mutual protection. Prerequisite: DFT 220.			
DFT 236 Construction Estimating and Field Inspection	3	3	4
Interpretation of working drawings for a project; preparation of material and labor quantity surveys from plans and specifications; approximate and detailed estimates of cost. The student will study materials take-off, labor take-off, sub-contractors' estimates, overhead costs, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Prerequisite: DFT 235.			
DFT 240 Furniture Drafting	2	6	4
The student will become familiar with the types of drawings used in furniture making, general types of furniture based on function and market, including built-in. Preliminary sketches will be followed by simple assembly-details and detail drawing of typical constructions for cases, frames, drawers, doors and seating pieces. Prerequisite: DFT 105.			
DFT 241 Furniture Design Drafting	2	6	4
The student will pursue the more complex detailing problems involving construction, carving delineations and less traditional materials such as formed plywood, plastics and metals. Specifications and bills of materials will be included. Prerequisites: DFT 240, DES 118.			
DFT 242 Furniture Design Drafting	2	6	4
Research to solve the design problem of developing a correlated furniture group using any necessary experiments and reference sources. A written report outlining and defining the entire project accompanied by preliminary sketches, presentation drawings, selected finished details and specifications is required as a part of the problem. Prerequisites: DFT 241, All Design Courses.			

	Class	Lab.	Credit
DFT 249 Merchandising Graphics	3	2	4
A study of graphic arts media, techniques, layout, type, and reproduction methods applicable to direct mail, display art, newspaper, magazine, catalog, tags, labels, etc. Prerequisite: None.			
DFT 1101 Schematics & Diagrams: Power Mechanics	0	3	1
Interpretation and reading of blueprints. Development of ability to read and interpret blueprints, charts, instruction and service manuals, views, dimensioning procedures, and notes. Prerequisite: None.			
DFT 1104 Blueprint Reading: Mechanical	0	3	1
Interpretation and reading of blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes. Prerequisite: None.			
DFT 1105 Blueprint Reading: Mechanical	0	3	1
Further practice in interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: DFT 1104.			

DFT 1106 Blueprint Reading: Mechanical	0	3	1
Advanced blueprint reading and sketching as related to detail and assembly drawings used in machine shops. The interpretation of drawings of complex parts and mechanisms for features of fabrication, construction and assembly. Prerequisite: DFT 1105.			

DFT 1110 Blueprint Reading: Building Trades	0	3	1
Principles of interpreting blueprints and trade specifications common to the building trades. Development of proficiency in making three view and pictorial sketches. Prerequisite: None.			

DFT 1113 Blueprint Reading: Electrical	1	3	2
Interpretation of schematics, diagrams and blueprints applicable to electrical installations with emphasis on electrical plans for domestic and commercial buildings. Sketching schematics, diagrams, and electrical plans for electrical installations using appropriate symbols and notes according to the applicable codes will be a part of this course. Prerequisite: DFT 1110.			

ECONOMICS

ECO 102 Economics	3	0	3
The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange, distribution, and consumption both in relation to the individual enterprise and to society at large. Prerequisite: None.			

ECO 104 Economics	3	0	3
Greater depth in principles of economics, including a penetration into the composition and pricing of national output, distribution of income, international trade and finance, and current economic problems. Prerequisite: ECO 102.			

ECO 106 Economics of Transportation	3	0	3
Acquaints the student with the economic aspects of transportation. Complete discussion from the earliest form of basic transportation to our present complex system of trans-			

portation. In addition to the historical approach, consideration is given to the economic factors involved in plant location and principles involved in present-day developments of transportation. Prerequisite: ECO 102.

ECO 108 Consumer Economics	3	0	3
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Designed to help the student use his resources of time, energy, and money to get the most out of life. It gives the student an opportunity to build useful skills in buying, managing his finances, increasing his resources, and to understand better the economy in which he lives. Prerequisite: None.

ELECTRICITY

ELC 101 Fundamentals of Electricity	4	6	6
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Elementary principles of electricity including: basic electric units, Ohm's Law, Kirchhoff's Law, network theorems, magnetics, basic electrical measuring instruments, inductance, capacitance, sine wave analysis, and non-resonant resistive, inductive and capacitive networks. Prerequisite: None.

ELC 102 Fundamentals of Electricity	4	6	6
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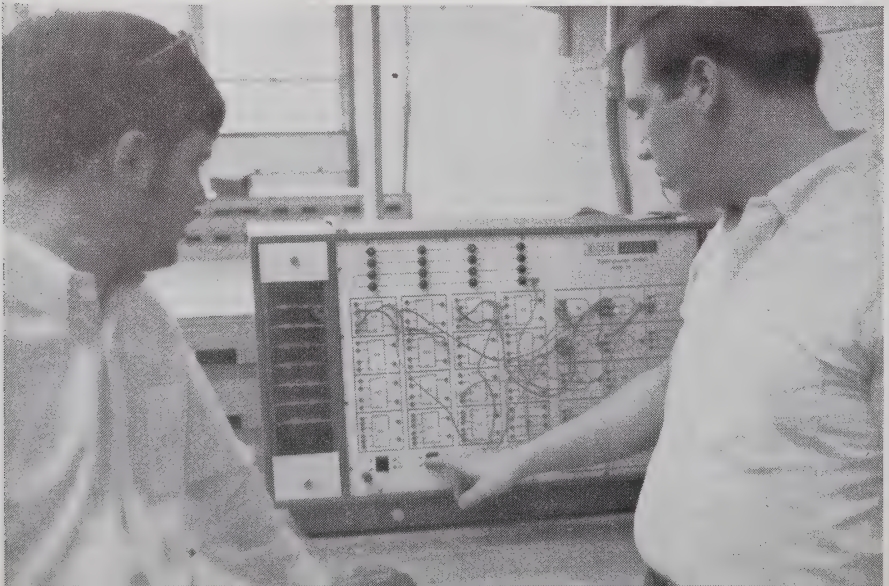
Series and parallel resonant-circuit analysis, resonant and non-resonant transformer analysis, basic diode power supply analysis, introduction to non-linear resistive control devices, and introduction to electromechanical devices. Prerequisite: ELC 101.

ELC 201 Electrical Machinery	3	0	3
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A course in the basic understanding and application of electricity to modern industrial machinery. Included is a study of direct current motors, motor controls and protecting devices, transformers, and the industrial applications of this equipment. Prerequisite: PHY 103.

ELC 210 Rotating Devices	2	2	3
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Introduction to electrical machinery. AC and DC motor and generator principles, synchros and servomechanisms, alternators and dynamotors, Ward-Leonard and amplidyne control systems will be analyzed. A general knowledge of the theory, operation, and maintenance of these devices and systems will be stressed. Prerequisites: ELC 102, PHY 102.



	Class	Lab.	Credit
ELC 215 Electrical Machines	5	3	6
Principles of direct-current generators and motors, types and characteristics; alternating current generators, transformers, three phase motors, synchronous motors and single phase motors. Prerequisites: MAT 102, PHY 102, ELC 102.			
ELC 240 Electrical Analysis and Maintenance	3	3	4
An introduction to troubleshooting techniques of the common problems of direct current and alternating current machines, transformers, circuit breakers and regulators. Emphasis will be on scheduling of maintenance, lubrication; and principles of plant maintenance. Prerequisites: ELC 225, ELN 208.			
ELC 246 Special Project	2	6	4
Students are required to design and construct a project approved by the instructor. Includes selection of project, design, construction and testing of completed project. Prerequisites: ELC 240, ELN 208, DFT 211.			
ELC 1112 Direct and Alternating Current	5	12	9
A study of the electrical structure of matter and electron theory, the relationship between voltage, current, and resistance in series, parallel, and series-parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchhoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits. Prerequisite: None.			
ELC 1113 Alternating Current and Direct Current Machines and Controls	5	12	9
Provides fundamental concepts in single and polyphase alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the use of electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type control used in small appliances such as: thermostats, timers, or sequencing switches. Prerequisites: ELC 1112, MAT 1115.			
ELC 1118 Industrial Electronics	3	6	5
Basic theory, operating characteristics, and application of vacuum tubes such as: diodes, triodes, tetrodes, pentodes, and gaseous control tubes. An introduction to amplifiers using triodes, power supplies using diodes, and other basic applications. Prerequisite: ELC 1113.			
ELC 1119 Industrial Electronics	3	6	5
Basic industrial electronic systems such as: motor controls, alarm systems, heating systems and controls, magnetic amplifier controls, welding control systems using thyatron tubes, and other basic types of systems commonly found in most industries. Prerequisite: ELC 1118.			
ELC 1124 Residential Wiring	5	9	8
Provides instruction and application in the fundamentals of blueprint reading, planning, layout, and installation of wiring in residential applications such as: services, switchboards, lighting, fusing, wire sizes, branch circuits, conduits, National Electrical Code regulations in actual building mock-ups. Prerequisites: ELC 1113, DFT 1110.			
ELC 1125 Commercial and Industrial Wiring	5	12	9
Layout, planning, and installation of wiring systems in commercial and industrial complexes, with emphasis upon blueprint reading and symbols, the related National Electri-			

cal Codes, and the application of the fundamentals to practical experience in wiring, conduit preparation, and installation of simple systems. Prerequisites: ELC 1118, ELC 1124.

ELECTRONICS

	Class	Lab.	Credit
ELN 101 Electronic Instruments and Measurements	1	6	3
A study of basic electronic instruments, their theory of operation, function, tolerances, and calibration. Both service and laboratory instruments will be studied. Laboratory experience will provide application of each type instrument studied. Prerequisite: ELC 102.			
ELN 105 Control Devices	5	6	7
A study in depth of the electrical characteristics of vacuum tubes and transistors. Basic parameters and applications of each type device to the three configurations of a three terminal two port system will be included. Prerequisite: ELC 102.			
ELN 201 Industrial Controls	3	2	4
Industrial controls is the study of modern methods of controlling machinery by electronic circuitry. Machinery controls and electronic mechanisms that automatically operate machines will be studied. Types of motors, generators, control signals and devices, thyratrons, gates, switches, and servomechanism circuits are major areas of study. Prerequisite: PHY 103.			
ELN 205 Applications of Vacuum Tubes and Transistors	5	6	7
Practical applications of vacuum tubes and transistors to basic audio amplifiers, radio frequency amplifiers, detectors, modulators and oscillators. Prerequisite: ELN 105.			
ELN 208 Industrial Electronics	5	4	6
Electronics as applied to a production system; rectification; electronically controlled rectifiers; servomechanisms; motors; magnetic amplifiers; ultrasonic cleaning; and variable strobe light. Prerequisite: ELN 105.			
ELN 210 Semiconductor Circuit Analysis	5	3	6
A study in some depth of the analysis and design of transistor circuits. Network theorems and equivalent circuits are used extensively in evaluating total circuit performance. Device peculiarities and limitations pertinent to reliable operations are considered. H. Y. Z. and T. parameters are employed as well as signal-flow graphs. Prerequisite: ELN 105.			
ELN 214 Wave Shaping and Pulse Circuits	2	2	3
Broadband amplifiers, magnetic amplifiers, multivibrators, wave shaping techniques, chopper amplifiers, clipper and clamper circuits. Prerequisites: ELN 105, MAT 103.			
ELN 215 Wave Shaping and Pulse Circuits	2	3	3
Pulse techniques, diode switches, gates, step-counters, restorers and other specific circuits which function as switches. Prerequisite: ELN 214.			
ELN 220 Advanced Electronic Systems	5	6	7
A course investigating numerous electronic systems through block diagram analysis of modules or building blocks of many complex electronic systems. Various circuits previously studied are arranged in their relationship to each other to produce these			

complex systems which are explained, reduced to functions, and then to the block diagrams of the complete system. AM, FM, and Single Sideband Transmitters and Receivers, Multiplexing, RV Transmitters and Receivers, Pulse-modulated systems, computers, telemetric systems, navigational systems, sonar, and radar will be considered. Prerequisite: All prior electronics courses. Corequisite: ELN 215.

ELN 225 Transmission and Propagation	3	0	3
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An introduction to the electromagnetic radiation, principles of antenna, radiation patterns and field strength. The characteristics and use of transmission lines in radio frequency application. Factors involved in propagation, ground waves, reflections, sky waves, atmospheric effects, ionosphere, fading, noise, static, wire radiators, directive gain, effects of ground, impedance, antenna systems and arrays. Prerequisite: ELN 105. Corequisite: ELN 205.

ELN 227 UHF and Microwave Systems	5	4	7
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A study of UHF and VHF components, circuits, and measurement techniques. The use of distributed constant elements, waveguides and coaxial cables, microwave links, high frequency oscillators, magnetrons, klystrons, traveling wave tubes. An introduction to the use of the Smith Chart. Prerequisite: ELN 225.

ELN 230 Television Systems	4	6	7
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A study of the principles of television including the television system, camera tubes, scanning and synchronization, composite video signal, receiver circuits, transmitting equipment, color television, and closed-loop systems. Corequisite: ELN 214.

ELN 235 Industrial Instrumentation	4	6	7
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Broad introduction to use of industrial electro-mechanical and electronic circuits and equipment. Provides an understanding of the methods, techniques, and skills required for installation, service and operation of a variety of industrial control systems. Analysis of sensing devices for detecting changes in pressure, temperature, humidity, sound, light, electricity, the associated circuitry and indicating and recording devices. Prerequisites: ELN 205, PHY 104.

ELN 240 Digital Computers	3	0	3
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An exploration into the methodology of counting and computing. Various computer techniques will be investigated including: non sinusoidal waveforms, binary and decade counters, industrial counters, readout devices, logic circuits, arithmetic circuits, storage devices, input-output devices, computer control, analog and digital converters. Prerequisite: ELN 214.

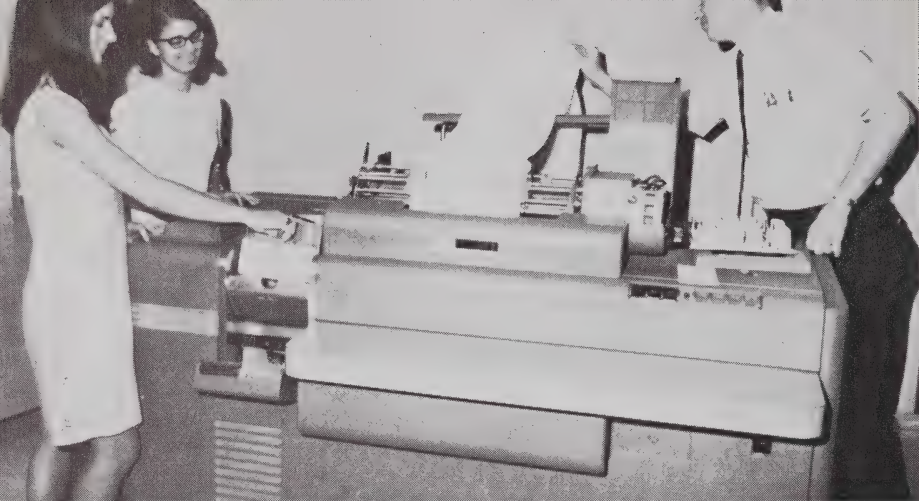
ELN 245 Electronic Design Project	0	4	2
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Students are required to design and construct a project approved by the instructor. Includes selection of project, design, construction, and testing of completed project. Projects may include: AM or FM transmitters or receivers, amplifiers, test equipment, control devices, simple counters, lasers, masers, etc. Prerequisite: ELN 205.

ENGLISH

EGN 101 Grammar	3	0	3
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Designed to aid the student in the improvement of self-expression in grammar. The approach is functional with emphasis on grammar, diction, sentence structure, punctu-



	Class	Lab.	Credit
ation, and spelling. Intended to stimulate students in applying the basic principles of English grammar in their day-to-day situations in industry and social life. Prerequisite: None.			

ENG 102 Composition	3	0	3
Designed to aid the student in the improvement of self-expression in business and technical composition. Emphasis is on the sentence, paragraph, and whole composition. Prerequisite: ENG 101.			

ENG 103 Report Writing	3	0	3
The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full-length report is required of each student at the end of the term. This report must have to do with something in his chosen curriculum. Prerequisite: ENG 101.			

ENG 104 Speed Reading	2	0	2
Designed to improve the student's ability to read rapidly and accurately. Special machines are used for class drills to broaden the span of recognition, to increase eye coordination and word group recognition and to train for comprehension in larger units. Prerequisite: None.			

ENG 204 Oral Communication	3	0	3
A study of basic concepts and principles of oral communications to enable the student to communicate with others. Emphasis is placed on the speaker's attitude, improving diction, voice, and the application of particular techniques of theory to correct speaking habits and to conducting meetings, conferences, and interviews. Prerequisite: ENG 101.			

ENG 206 Business Communication	3	0	3
Develops skills in techniques of writing business communications. Emphasis is placed on writing action—getting sales letters and prospectuses. Business reports, summaries of business conferences, letters involving credit, collections, adjustments, complaints, orders, acknowledgments, remittances, and inquiry. Prerequisite: ENG 101.			

	Class	Lab.	Credit
ENG 208 Business English	3	0	3
A course designed to improve the student's ability to use correct English, punctuation, and spelling in business applications. Includes a review of basic English grammar. Prerequisite: ENG 101.			
ENG 1101 Reading Improvement	2	0	2
Designed to improve the student's ability to read rapidly and accurately. Special machines are used for class drill to broaden the span of recognition, to increase eye coordination and word group recognition and to train for comprehension in larger units. Prerequisite: None.			
ENG 1102 Communication Skills	3	0	3
Designed to promote effective communication through correct language usage in speaking and writing. Prerequisite: None.			

FURNITURE

FUR 101 Introduction to the Furniture Industry	3	0	3
A study of the early history and movement of the furniture industry. The course will look into the organizational staff structure and the departmental structure of the average furniture company. The various jobs which are available in the industry will also be described and studied. Prerequisite: None.			
FUR 102 Furniture Processes	3	3	4
A comprehensive study of materials and methods of furniture manufacturing. Classification, characteristics, and uses of wood species, veneer and manufactured board processes and uses will be studied. Production wood working operations and methods using circular saws, jointer, planer, band saw, drill press, lathe shaper, router and portable hand tools will be explored. Wood joints, gluing processes, fasteners and assembly procedures will be included. Prerequisite: None.			
FUR 103 Furniture Processes	3	3	4
The preparation of woods, types of finishes and their application, equipment and processes will be studied. Procedures of joining wood and other commonly used materials and appliques are included. Forms of upholstery, equipment, materials and processes will be explored. Functional and decorative hardware and mechanisms will be studied. Prerequisite: FUR 102.			
FUR 104 Furniture Construction	4	6	6
This course is intended to introduce the student to various methods of case goods construction. Economic and quality construction will be covered in detail. Also included will be application of standards, analysis of furniture drawings, and construction of the master billing sheet. Prerequisite: DFT 101.			
FUR 105 Upholstery Processes	2	2	3
A study into the tools, materials, and basic techniques and in the upholstery industry. Emphasis is placed on mass production techniques rather than custom or repair upholstery. The course also includes a study and interpretation of design detailed drawings of various styles. Prerequisite: None.			

	Class	Lab.	Credit
FUR 120 Lumber and Its Characteristics	5	0	5
This course is designed to give the student an understanding of the common species of lumber used in the furniture industry. It also covers the grading and kiln drying of lumber. Prerequisite: None.			
FUR 201 Assembly Methods and Techniques	2	6	5
A course designed to acquaint the student with the various standard assembly methods employed by furniture manufacturers. Special study will be given to assembly equipment and tools, jigs and fixtures, sandpaper and sanding equipment, and adhesives. Plywood, particle board and laminated construction will also be discussed. Prerequisite: None.			
FUR 202 Wood and Plastics Finishing	2	8	6
An instruction in the step-by-step procedures of wood finishing from the preparation of unfinished wood through the rubbing and polishing operations. Procedures for the basic three-step finish plus techniques for higher quality finishes will be presented. Treatment and finishing of plastic components will also be discussed. Prerequisite: None.			
FUR 205 Machine Room Methods and Techniques	2	6	5
A course designed to familiarize the student with proper machine room practices as applied to the furniture industry. Included will be instruction on machinery set-up and operation, proper handling of materials and personnel, proper selection of saws and cutterheads, maintenance, safety, and sequence of normal operations. Prerequisite: None.			
FUR 247 Research Problem	2	6	4
The students in this course will be required to look into special problems related to the furniture industry and other assigned problems that the instructor feels would benefit the student. Prerequisite: FUR 104.			

INDUSTRIAL SCIENCE

ISC 201 Industrial Organization and Management	3	0	3
Organizational structure for industrial management; operation and financial activities, including accounting, budgeting, banking, credit and industrial risk, forecasting of markets, selection and layout of physical facilities; selection, training, and supervision of personnel as found in typical industrial organizations. Prerequisite: None.			
ISC 211 Cost Analysis	5	0	5
An introduction to basic techniques of analyzing and controlling cost elements in the manufacture of furniture. Special emphasis is placed on economical utilization of manpower materials, and manufacturing facilities. Prerequisites: FUR 104, FUR 105.			
ISC 214 Production Scheduling	3	0	3
An introduction to production scheduling in the furniture industry. This course deals with the routing of production through the various departments, maintaining work load balances, coordination of orders and delivery information, and control of inventories in such a manner as to promote an efficient operation. Prerequisite: None.			

	Class	Lab.	Credit
ISC 215 Plant and Production Planning	3	2	4
Principles of plant planning dealing with equipment placement for production flow, versatility and optimum effectiveness. In-plant and inter-plant traffic, routing, and communications will be studied. Prerequisite: None.			
ISC 216 Product Development	3	0	3
This course of study is to familiarize the student with product development as it relates to the complete manufacturing organization. The evolution from original idea to retailer involving sales, design and engineering cost, plant production, shipping, and outside agencies. Prerequisite: None.			
ISC 221 Quality Control	3	0	3
A study of the quality control techniques used in the furniture industry. The course will include inspection of purchased materials, in-process inspection, and finished product inspection, with emphasis on maintaining an acceptable quality level. Criteria for the establishment of quality standards will also be discussed. Prerequisites: FUR 104, FUR 105.			

MANAGEMENT

MGT 201 Management Techniques	5	0	5
A course designed to explore decision-making tools of modern management in the areas of production and administration. Subjects to be included are job evaluation, work measurement, methods improvement, work sampling, cost control, supervisory development, purchased material control, and others. A detailed study of each subject cannot be made within this course but the value of each to good management will be presented.			

MATHEMATICS

MAT 101 Technical Mathematics	5	0	5
The real number system is developed as an extension of natural numbers. Number systems of various bases are introduced. Fundamental algebraic operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed. Prerequisite: Satisfactory evidence that admission requirements have been met.			
MAT 102 Technical Mathematics	5	0	5
A continuation of MAT 101. Advanced algebraic and trigonometric topics including quadratics, logarithms, determinants, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions are studied in depth. Prerequisite: MAT 101.			
MAT 103 Technical Mathematics	5	0	5
The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: MAT 102.			

	Class	Lab.	Credit
MAT 110 Business Mathematics	5	0	5
This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business. Prerequisite: None.			
MAT 201 Technical Mathematics	5	0	5
A continuation of MAT 103. More advanced concepts of differentiation and integration are considered. Included are graphs and derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration techniques, polar equations, parametric equations, and Fourier series. Prerequisite: MAT 103.			
MAT 202 Calculus and Laplace Transforms For Electronics	5	0	5
An investigation of the methods of calculus which are of the most direct use in the study of electronic circuits. Introduction to selected topics from differential equations and Laplace transforms and applications of these methods to the solution of electronic circuit problems. Prerequisite: MAT 201. Corequisite: ELN 214.			
MAT 1101 Fundamentals of Mathematics	5	0	5
Practical number theory. Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth. Prerequisite: None.			
MAT 1103 Geometry	3	0	3
Fundamental properties and definitions; plane and solid geometric figures, selected general theorems, geometric construction of lines, angles and plane figures. Dihedral angles, areas of plane figures, volumes of solids. Geometric principles are applied to shop operations. Prerequisite: None.			
MAT 1104 Trigonometry	3	0	3
Trigonometric ratios; solving problems with right triangles, using tables, and interpolating; solution of oblique triangles using law of sines and law of cosines; graphs of the trigonometric functions; inverse functions, trigonometric equations. All topics are applied to practical problems. Prerequisite: MAT 1103.			
MAT 1115 Electrical Mathematics I	5	0	5
A study of fundamental concepts of algebra; basic operations of addition, subtraction, multiplication, and division; solution of first order equations, use of letters and signs, grouping, factoring, exponents, ratios, and proportions; solution of equations, algebraically and graphically; a study of logarithms and use of tables; and introduction to trigonometric functions and their application to right angles; and a study of vectors for use in alternating current. Prerequisite: None.			
MAT 1116 Electrical Mathematics II	5	0	5
A working knowledge of the powers of 10, Ohm's Law for series and parallel circuits, quadratic equations, Kirchhoff's Laws, trigonometric functions, plane vectors, alternating currents, vector algebra and logarithms. Prerequisite: MAT 1115.			
MAT 1123 Machinist Mathematics	3	0	3
Introduces gear ratio, lead screw and indexing problems with emphasis on application to the machine shop. Practical applications and problems furnish the trainee with ex-			

perience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems. Prerequisite: MAT 1104.

MECHANICAL

	Class	Lab.	Credit
MEC 101 Machine Processes	2	4	3
An introductory course designed to acquaint the student with basic hand tools, safety procedures and machine processes of our modern industry. It will include a study of measuring instruments, characteristics of metals and cutting tools. The student will become familiar with the lathe family of machine tools by performing selected operations such as turning, facing, threading, drilling, boring, and reaming. Prerequisite: None.			
MEC 102 Machine Processes	2	4	3
Advanced operations on lathe, drilling, boring and reaming machines. Milling machine theory and practice. Thorough study of the types of milling machines, cutters, jig and fixture devices, and the accessories used in a modern industrial plant. Safety in the operational shop is stressed. Prerequisite: MEC 101.			
MEC 110 Fundamental Mechanisms	2	4	4
A study of the purpose and actions of cams, cables, gear trains, differentials, screws, belts, pulleys, shafts, levers, and other mechanical devices used to transmit or control signals. Prerequisite: PHY 102.			
MEC 205 Strength of Materials	3	2	4
Study of principles and analysis of stresses which occur within machine and structure elements subjected to various types of loads such as static, impact, varying and dynamic. Analyses of these stresses are made as applied to thin-walled cylinders and spheres, riveted and welded joints, beams, columns and machine components. Prerequisites: PHY 106, MAT 103.			
MEC 210 Physical Metallurgy	3	3	4
Introductory course in metallurgy, a basic study of the properties of metals and alloys. Analysis of the structure of metals and alloys, atomic structure, nuclear structure, and nuclear reactions. Solid (crystalline) structures, methods of designating crystal planes; liquid and vapor phases; phase diagrams; and alloy systems. Prerequisite: PHY 101.			
MEC 211 Physical Metallurgy	3	3	4
Properties of metals and alloys, the reactions of metals, diffusion, carburizing, metal bonding and homogenization; recrystallization and grain growth, age hardening, nitriding, internal oxidation; heat treatment of steel; laboratory experiments and demonstrations. Prerequisite: MEC 210.			
MEC 235 Hydraulics and Pneumatics	3	3	4
The basic theories of hydraulic and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electrohydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs. Prerequisite: PHY 102.			
MEC 237 Control Systems	2	4	4
Hydraulic, pneumatic, mechanical, electrical and electronic control systems and components. Basic description, analysis and explanation of operation. Typical performance characteristics, limitations on performance, accuracy, applications and their utilization in industrial processes. Prerequisite: PHY 103.			

	Class	Lab.	Credit
MEC 1101 Machine Shop Theory & Practice	3	12	7
An introduction to the machinist trade and the potential it holds for craftsmen. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice. Prerequisite: None.			
MEC 1102 Machine Shop Theory & Practice	3	12	7
Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course. Prerequisite: MEC 1101.			
MEC 1103 Machine Shop Theory & Practice	3	12	7
Advanced work on the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology with additional processes on calculating, cutting and measuring of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder. Prerequisite: MEC 1102.			
MEC 1104 Machine Shop Theory & Practice	3	12	7
Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry. Prerequisite: MEC 1103.			
MEC 1115 Treatment of Ferrous Metals	2	3	3
Investigates the properties of ferrous metals and tests to determine their uses. Instructions will include some chemical metallurgy to provide a background for the understanding of the physical changes and causes of these changes in metals. Physical metallurgy of ferrous metals, producing iron and steel, theory of alloys, shaping and forming, heat treatment for steel, surface treatments, alloy of special steel, classification of steels, and cast iron will be topics for study. Prerequisite: None.			



	Class	Lab.	Credit
MEC 1116 Treatment of Non-Ferrous Metals	2	3	3
Continuation of the study of physical metallurgy. The non-ferrous metals: bearing metals (brass, bronze, lead), light metals (aluminum and magnesium), and copper and its alloys are studied. Powder metallurgy, titanium, zirconium, indium and vanadium are included in this course. Prerequisite: MEC 1115.			

NURSING

	Class	Lab.	Clinical	Credit
PNE 1101 Fundamentals of Practical Nursing	9	6	3	13

Provides an opportunity for the student to gain a knowledge of the principles which are basic to effective and safe nursing care. Body mechanics for nurse and patient, sterilization and disinfection methods, use of hospital equipment, techniques of daily hygienic patient care. Laboratory practice includes beginning skills and hygienic care of the dependent patient.

PNE 1102 Body Structure and Function	5	2	0	6
A thorough study of the general plan of the body and the systems, nervous, endocrine, skeletal, muscular, circulatory, digestive, respiratory, urinary and reproductive. The course is designed for understanding of how the body controls its functions, distributes food and oxygen, removes waste and provides for survival.				

PNE 1103 Vocational Adjustments Including Communicative Skills	3	0	0	3
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An interpretation of the role of the practical nurse student with some emphasis on the historical background in nursing. It also includes introduction to the needs for adequate methods of and effective use of written and spoken communicative skills.

PNE 1104 Medical-Surgical Nursing I	4	2	0	5
Designed to give the student material basic to the beginning understanding of the nursing care of patients with common problems presented by illness. Processes of illness, diagnostic tests, physiologic reaction to pain, needs of patients with long term illnesses, rehabilitation, pre and post operative needs, anesthesia agents, and modification of diet for disease condition.				

PNE 1105 Maternity Nursing I	3	2	0	4
Presentation of the modern aspects of maternity nursing with emphasis on the normal pregnancy; helping to meet the needs during the anti-partal period, during labor and delivery and of the normal newborn.				

PNE 1106 Pediatric Nursing I	2	2	0	3
Presents the normal growth and development of the child, the effects of, and nursing needs of the child arising from hospitalization for a common or sub-acute illness.				

PNE 1107 Clinical Experience I	0	0	20	7
Provides experience in the affiliating hospital in the nursing care of selected patients who are sub-acutely ill, using skills learned and practiced in the laboratory.				

	Class	Lab.	Clinical	Credit
PNE 1108 Medical-Surgical Nursing II	4	0	0	4
Continuation of PNE 1104 providing the student with additional knowledge in developing skills necessary to meet the needs of the more dependent patient.				
PNE 1109 Maternity Nursing II	3	0	0	3
A continuation of PNE 1105 with the background knowledge of the normal patient discussing complication of the maternity patient and their related nursing care. Includes also participating in meeting the needs of the newborn who has abnormalities or disorders.				
PNE 1110 Pediatric Nursing II	4	0	0	4
Continuation of PNE 1106 based on previous study, presents knowledge and skills needed in meeting the needs of the acutely ill child.				
PNE 1111 Pharmacology	1	0	0	1
Designed to develop the knowledge and skills needed in preparing and giving medications both oral and injectable. Also gain knowledge of equipment, skill in the use of sterile technique used in preparation and giving the injectable medication. Study of source, effects, etc., is provided with each unit in Medical-Surgical Nursing, Maternity Nursing, and Pediatrics.				
PNE 1112 Clinical Practice II	0	0	24	8
Provides nursing care experiences with selected patients correlated with classroom theory.				
PNE 1113 Medical-Surgical Nursing III	10	0	0	10
A continuation of PNE 1104 and 1108 presenting selected experience in the nursing care of patients with various disorders including care of the more critically or seriously ill, developing further the role of the LPN as an assistant to the RN. Also included is the role in disaster or emergency nursing.				
PNE 1114 Vocational Adjustments II	2	0	0	2
A study of the legal and ethical responsibilities of the Licensed Practical Nurse, opportunities of employment and obligations assumed upon employment. Also additional discussion of nursing organizations and the LPN eligibility for membership and benefits derived from membership.				
PNE 1115 Clinical Experience III	0	0	24	8
Provides experience in the care of the medical, surgical, obstetrical or pediatric patient who is critically or seriously ill. Emphasis is placed on functioning in the assistant role. Experience in the administration of medications is provided under the direct supervision of the clinical instructor.				

PHYSICS

	Class	Lab.	Credit
PHY 101 Physics: Work, Energy, Power	3	2	4
Major areas covered in this course are work, energy, and power. Instruction includes such topics as statics, forces, center of gravity and dynamics. Units of measurement and their applications are a vital part of this course. A practical approach is used in teaching students the use of essential mathematical formulas. Prerequisite: None.			

	Class	Lab.	Credit
PHY 102 Physics: Properties of Matter	3	2	4
A fundamental course covering several basic principles of physics. The divisions included are solids and their characteristics, liquids at rest and in motion, gas laws and applications. Laboratory experiments and specialized problems dealing with these topics are part of this course. Prerequisite: PHY 101.			
PHY 103 Physics: Electricity	3	2	4
Basic theories of electricity, types of electricity, methods of production, and transmission and transforming of electricity. Electron theory, electricity by chemical action, electricity by friction, electricity by magnetism, induction voltage, amperage, resistance, horsepower, wattage, and transformers are major parts of the course. Prerequisites: MAT 101, PHY 101.			
PHY 104 Physics: Light and Sound	3	2	4
A survey of the concepts involving wave motion leads to a study of sound, its generation, transmission and detection. The principles of wave motion also serve as an introduction to a study of light, illumination and the principles involved in optical instruments. Application is stressed throughout. Prerequisites: MAT 101, PHY 101.			
PHY 106 Applied Mechanics	5	0	5
Concepts and principles of statics and dynamics. Parallel concurrent and noncurrent force systems in coplanar and noncoplanar situations. Concepts of centroids and center of gravity, moments of inertia, fundamentals of kinetics, and kinematics of velocity and motion. Prerequisites: MAT 103, PHY 101.			
PHY 1101 Applied Science	3	2	4
An introduction to physical principles and their application in industry. Topics in this course include measurement; properties of solids, liquids, and gases; basic electrical principles. Prerequisite: None.			
PHY 1102 Applied Science	3	2	4
The second in a series of two courses of applied physical principles. Topics introduced in this course are heat and thermometry, and principles of force, motion, work, energy, and power. Prerequisite: None.			

PSYCHOLOGY

PSY 112 Personality Development	3	0	3
Designed to help the student recognize the importance of the physical, intellectual, social, and emotional dimensions of personality. Emphasis is placed on grooming and methods of personality improvement. Prerequisite: None.			
PSY 206 Applied Psychology	3	0	3
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community. Prerequisite: None.			

	Class	Lab.	Credit
PSY 210 Industrial Psychology	3	0	3
A study of the principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings and emotions are considered with particular reference to on-the-job problems. Other topics investigated are: employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community. Prerequisite: None.			

PSY 1100 Human Relations	2	0	2
A study of basic principles of human behavior. The problems of the individual are studied in relation to society, group membership and relationships within the work situation (nurse-patient, nurse-coworker relationships). Prerequisite: None.			

PSY 1101 Human Relations	3	0	3
A study of basic principles of human behavior. The problems of the individual are studied in relation to society, group membership, and relationships within the work situation. Prerequisite: None.			

SOCIAL SCIENCE

SSC 201 Social Science	3	0	3
An integrated course in the social sciences, drawing from the fields of anthropology, psychology, history, and sociology. Prerequisite: None.			

SSC 202 Social Science	3	0	3
A further study of social sciences with emphasis on economics, political science, and social problems as they relate to the individual. Prerequisite: SSC 201.			

SSC 205 American Institutions	3	0	3
A study of the effect of American social, economic, and political institutions upon the individual as a citizen and as a worker. The course dwells upon current local, national, and global problems, viewed in the light of our political and economic heritage. Prerequisite: None.			

SSC 207 Rural Society	3	0	3
A study of selected elements of rural sociology with emphasis on current social changes. The course provides a sociological background for the understanding of rural social changes. Areas of study include rural culture, group relationships, social classes, rural and suburban communities, farm organizations, the communication of agricultural technology, rural social problems, agricultural adjustment and population change. Prerequisite: None.			

SSC 208 Marriage and the Family	3	0	3
Social, psychological and economic problems of the family in the United States. A study of contemporary American family patterns, emphasizing the problems of personality development, courtship, and marital adjustment. Prerequisite: None.			

SSC 209 United States Government	3	0	3
A study of government with emphasis on basic concepts, structure, powers, procedures and problems. Prerequisite: None.			

ADMINISTRATION AND FACULTY

BOARD OF TRUSTEES

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Superintendent, Catawba County Board of Education—(Chairman Board of Trustees)—expir. (75)—Lenoir Rhyne College, A.B.—Appalachian State University, M.A.

RALPH BOWMAN

President, Hickory Chair Company—(Vice Chairman) Board of Trustees, expir. (71).

DR. JAMES PRICE

Dentist—expir. (71)—Mars Hill College, B.A.—University of Tennessee, D.D.S.

JOHN H. WEATHERLY

Forester, Catawba Timber Company—expir. (75). Attended Clemson University—University of Georgia, B.S.

***BEN BROOKS**

Mail Carrier, U. S. Post Office—expir. (69)—Lenoir Rhyne College, A.B.

R. WALKER GEITNER

President, First National Bank of Catawba County, expir. (73) University of North Carolina—L.L.B.

J. HUBERT GILBERT

Secretary and Sales Manager, Catawba Hosiery Mills, Inc. expir. (71)—N. C. State University, B.S.

***CHARLES GROVE**

Secretary-Treasurer, G & H Hosiery Co., Inc.—expir. (69)—Lenoir Rhyne College, B.S.—graduate work Duke University.

***ADRIAN L. SHUFORD, JR.**

President, Jackson Buff Corporation, expir. (69)—Cornell University—attended University of North Carolina.

JAY F. WILFONG

Owner, Wilfong Poultry Farms—expir. (75), N. C. State University, B.S.

BRENARD G. BROWN

Company representative, Jordan Business Forms, expir. (73)—Davidson College, B.S.

FRANK M. LITTLE

Company representative, Phillips Foscue Company, expir. (75)—Attended Duke University—Lenoir Rhyne College, B.S.

ADMINISTRATIVE PERSONNEL

- Robert E. Paap.....*President*
 B.A.—Peru State University
 M.A.—Colorado State University
 Graduate work—University of Nebraska,
 Michigan State Univ., Colorado State Univ.,
 N. C. State Univ., and Oklahoma State Univ.
- Craven H. Sumerell.....*Dean of Instruction*
 A.B.—Atlantic Christian College
 M.A.—East Carolina University
- Bruce B. Bishop.....*Dean of Student Services*
 A.B.—Lenoir Rhyne College
 M.A.—Appalachian State University
 Graduate work—Indiana State University
- Thomas W. Jameson.....*Director of Fiscal Affairs*
 B.A.—Drew University
 M.A.—Appalachian State University
- William D. Killian.....*Director of Vocational-Technical Education*
 B.S.—Appalachian State University
 M.A.—Appalachian State University
 B.S.—N. C. State University
 Ed.D.—N. C. State University
- M. Ervin Lineberger.....*Director of Extension*
 B.S.—N. C. State University
 M.A.—Appalachian State University
- Larry H. Penley.....*Director of Adult Education*
 A.B.—Lenoir Rhyne College
 B.D.—Southern Baptist Seminary
 M.A.—Appalachian State University
 M.D.—Southern Baptist Seminary
 Ed.D.—Luther Rice Seminary
- Daniel R. Ballard.....*Director of Guidance and Counseling*
 A.B.—Lenoir Rhyne College
 M.A.—Appalachian State University
- Larry A. Isenhour.....*Registrar*
 A.B.—Lenoir Rhyne College
- Dan R. Gwaltney.....*Counselor*
 A.B.—Wake Forest College
 M.A.—Appalachian State University
- E. Harold Hawn.....*Counselor*
 A.B.—Wake Forest College
 M.A.—George Peabody College
- Richard Harwell.....*Evening Director*
 A.B.—Lenoir Rhyne College
 M.A.—Appalachian State University
- Harry L. Cooke.....*Director of Learning Resource Center*
 A.B.—Appalachian State University
 M.A.—Appalachian State University
 Graduate work—Duke University

STAFF PERSONNEL

Elizabeth Robinson.....	<i>Bookkeeper</i>
Jeannean Herman.....	<i>Secretary to President</i>
Reita Lackey.....	<i>Secretary</i>
Judy Walls	<i>Secretary</i>
Nancy Annas.....	<i>Records Clerk</i>
Linda Lytton.....	<i>Secretary</i>
Josephine Smith.....	<i>Receptionist</i>
Donna Herman.....	<i>Secretary</i>
Violet Teague.....	<i>Secretary</i>
Janice Morrow.....	<i>Secretary</i>
Martha Bock.....	<i>Secretary</i>
Carol Hicks.....	<i>Secretary</i>
Juanita Yount.....	<i>Evening Secretary</i>

THE FACULTY

Robert Abernethy, *Furniture Drafting and Design*

B.S., Western Carolina University.

Sue F. Austin, *Business*

B.S., M.A., Appalachian State University; Graduate Study, Appalachian State University.

J. Bill Baird, *English*

A.B., Lenoir Rhyne College; M.A., Appalachian State University.

Otto J. Blumenstein, *Electronics*

B.S., University of Maryland.

Roesetta Boliek, *Mathematics*

B.S., Florida State College for Women.

Hilda Flowers Brittain, *Business*

A.B., Lenoir Rhyne College; Specialized Training, University of North Carolina at Charlotte, Kings Business College.

Bobbie Brown, *Business*

B.S., East Carolina University; Graduate Study, Appalachian State University, Lenoir Rhyne College.

Ruben Bruner, *Brick Masonry*

Nineteen years experience as brick mason and self-employed general contractor.

Carol Cartner, *Business*

A.B., Lenoir Rhyne College; M.A., Appalachian State University.

Richard Cobb, *Agricultural Business*

A.A., St. Petersburg Jr. College; B.S., University of Florida; M.S., New Mexico State University.

Pauline Coble, *Upholstery*

College Extension Division of North Carolina State University; sixteen years experience in furniture industry.

James Z. Daniel, *Ornamental Horticulture*

B.S., University of Tennessee; Graduate Study, Appalachian State University, North Carolina State University.

Robert L. Denton, *Mathematics*

A.B., Emory University; M.Ed., Duke University; Graduate Study, New York University, Rutgers University, Stevens Institute of Technology, North Carolina State University, University of South Carolina, University of Alabama, Appalachian State University.

Joseph M. Dixon, *Librarian*

B.S., Appalachian State University; M.S., University of N. C. at Chapel Hill.

Margaret Edwards, *Coordinator of Directed Studies Laboratory*

A.B., Lenoir Rhyne College; M.A., Appalachian State University.

Tom Elliott, *Upholstery*

Seventeen years experience in furniture industry.

Clarence T. Fox, Jr., *Social Science*

A.B., Lenoir Rhyne College; M.A., Appalachian State University; Graduate Study, Converse College; NDEA Foreign Language Fellowship, University of Wichita.

Kenneth Garrett, *Traffic and Transportation*

B.S., University of Tennessee; Graduate Study, Earlham College.

Bernard C. Gray, *Traffic and Transportation*

B.S., B.A., University of Florida.

Clay Groves, *Electronics*

Capital Radio Institute, College Extension Division of North Carolina State University; A.A.Sc., Catawba Valley Technical Institute.

Roy A. Gull, *Electronics*

B.S., South Dakota School of Mines and Technology; Graduate Study, New York State University at Buffalo.

Della Haffner, *Practical Nursing*

B.S., R.N., Union College.

Jessie Ray Hall, *Business Administration*

B.S., M.S., Virginia Polytechnic Institute; Graduate Study, American Institute of Banking, University of Virginia, North Carolina State University, Madison College.

Tom Hardison, *Mechanical Drafting and Design*

B.M.E., Georgia Institute of Technology.

John Hemmings, *Data Processing*

Appalachian State University, New Brunswick IBM College, Rutgers University, IBM Educational Schools.

Robert Hill, *Social Studies*

B.S., M.A., Appalachian State University.

Anne L. Huffman, *English*

B.A., University of North Carolina at Chapel Hill; Graduate Study, Trinity College, Appalachian State University, Colorado State University, University of North Carolina at Chapel Hill.

Manuel Johnson, *Architectural Drafting and Design*

A.A.Sc., Catawba Valley Technical Institute.

Norman Lackey, *Electrical Installation and Maintenance*

Coyne Electrical School, North Carolina State University, Pacific International University, University of North Carolina at Greensboro; A.A.Sc., Catawba Valley Technical Institute.

Harold Lowe, *Furniture Production*

B.S., North Carolina State University.

George T. McLeod, *Automotive*

Nashville Automotive and Diesel College; General Motors Automotive and Air Conditioning Training School; Transicold Training School.

Greg Noble, *Business Administration*

B.S., Carnegie-Mellon; M.S., University of Pittsburgh.

Eugene Pearson, *Business Administration*

B.A., Vanderbilt University; M.A., University of Kentucky; Graduate Study, University of Chicago.

Stanley Pons, *Mathematics*

B.S., Wake Forest University; M.S., University of Michigan; Graduate Study, University of Michigan.

John Poropatic, *Machine Shop*

Stout State University, North Carolina State University Summer Institute, University of Illinois; A.A.Sc., Catawba Valley Technical Institute.

Carl Rector, *Mathematics and Physics*

A.B., Lenoir Rhyne College; M.A., University of Wyoming.

Frank Ritchie, *Furniture Production*

B.S., North Carolina State University.

Kenneth W. Ross, *Furniture Drafting and Design*

B.S., North Carolina State University; Graduate Study, Appalachian State University; A.A.Sc., Catawba Valley Technical Institute.

Dario Santi, *Architectural Drafting and Design*

B.A., Catholic University of America; M.A., Pratt Institute; Graduate Study, Hofstra University.

C. C. Sherrill, *Business Administration*

A.B., Lenoir Rhyne College; LL.B., Atlanta Law School.

David Smith, *Data Processing*

B.S., M.A., Appalachian State University; Specialized Training, IBM Training Center; Graduate Study, Appalachian State University.

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D.C., Logan College; IBM Educational Schools.

Peggy Y. Triplett, *Business Administration*

A.B., Lenoir Rhyne College; M.A., Appalachian State University.

Gary Willis, *Business Administration*

B.S., Illinois Wesleyan University; J.D., Stetson College of Law, Graduate Study, Loyola University of the South.

Thomas E. Winn, *Upholstery*

College Extension Division of North Carolina State University; thirteen years experience in furniture industry.

Gordon A. Yount, *Physics and Mathematics*

B.S., Lenoir Rhyne College; M.A., University of North Carolina at Chapel Hill; Graduate Study, Texas Instruments, Inc.

Louise Yount, *Practical Nursing*

B.A., R.N., Lenoir Rhyne College; James Walker Memorial Hospital School of Nursing; Graduate Study, University of North Carolina at Chapel Hill, Catholic University, North Carolina State University.

Paul Yount, *Automotive*

State Diploma in Automotive Mechanics, Catawba Valley Technical Institute; Ford Motor Company Service Schools; General Motors Training Center.

ACADEMIC CALENDAR

1970-71

FALL QUARTER

Registration	September 2 and 3, 1970
Day Classes Begin	September 8, 1970
Night Classes Begin	September 8
Last Day of Registration	September 14
End of Fall Quarter	November 23, 1970

WINTER QUARTER

Registration	November 30, 1970
Day Classes Begin	December 2
Night Classes Begin	December 2
Last Day of Registration	December 8
End of Winter Quarter	February 26, 1971

SPRING QUARTER

Registration	March 3, 1971
Day Classes Begin	March 5
Night Classes Begin	March 8
Last Day of Registration	March 11
End of Spring Quarter	May 24, 1971

SUMMER QUARTER

Registration	May 27, 1971
Day Classes Begin	May 31
Night Classes Begin	May 31
Last Day of Registration	June 4
End of Summer Quarter	August 16, 1971

HOLIDAYS

Labor Day	September 7, 1970
Thanksgiving	November 26 & 27, 1970
Christmas	Dec. 23, 1970 thru January 1, 1971
Easter	Good Friday, April 9 & Easter Mon., April 12.
Independence Day	July 5, 1971

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